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# **Sandia National Laboratories, California Environmental Management System Program Manual**



Prepared by  
Environmental Management Department  
Sandia National Laboratories  
Livermore, California 94550

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# **Sandia National Laboratories, California Environmental Management System Program Manual**

Environmental Management Department  
Sandia National Laboratories, California  
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Livermore, CA 94550

## **Abstract**

The Sandia National Laboratories, California (SNL/CA) Environmental Management System (EMS) Program Manual documents the elements of the site EMS Program. The SNL/CA EMS Program conforms to the International Standard on Environmental Management Systems, ISO 14001:2004 and Department of Energy (DOE) Order 450.1.

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## Summary of Document Changes

Significant changes made to the April 2009 edition of the EMS Program Manual are marked with a sidebar within the document and summarized in Table 1.

**Table 1 Summary of Changes to EMS Program Manual, April 2009**

Section	Page	Change
Various		Updated references and summary of information throughout document to reflect change in Corporate Business Rules System to new Corporate Policy System
1.1	9	Updated to reflect changes in DOE Order 450.1A.
1.2	10	Added statement that EMS Manual information represents a point in time, with most up to date information provided on the department website.
3.3	18	Replaced Authorities and Responsibilities letter with updated version.
4.0	21	Updated the significant aspects for 2009.
4.1	22	Updated Table 4 with new ranking scores for 2009
4.1	22	Updated Table 5 with new significant aspects.
6.2	32 - 39	Replaced Fast Track action sheets for significant aspects.
10.1	49	Updated and added footnote about upcoming changes in CBR system.
10.2.1	50	Added footnote about upcoming changes to work planning and control process.
10.2.3	53	Added Army Corp permit for Arroyo Improvements to Table 10
10.2.4	54	Added text about new environmental specifications and environmental permit.
11.2	55	Updated status of obsolete document control issues.
12.1.1	57	Added Work Authorization Form to training section
12.1.3	58	Added information about ES&H Visitor briefing card to visitor awareness section
15.1.1	65	Updated 2008 audit information
15.2.1	65	Updated 2008 assessment information
16.1	67	Updated audit and assessment tracking with new information from updated assessment procedure
16.2	67	Updated corrective and preventive action process to match procedure.
16.3	68	Updated validation process to match procedure.
17	69	Updated with results of 2008 management reviews.
19	72	Added Web File Share electronic records option
20	74	Updated communications calendar

## Acronyms and Abbreviations

BAAQMD	Bay Area Air Quality Management District
CARB	California Air Resources Board
CBR System	Corporate Business Rules System
CEDT System	Corporate Education, Development, and Training System
CFR	Code of Federal Regulations
CPR	corporate process requirement
CPS	corporate policy statement
CPSR	corporate policy statement requirement
CWRCB	California Water Resources Control Board
DOE	Department of Energy
EMS	Environmental Management System
EP Rep	Environmental Programs Representative
EPCRA	Emergency Planning and Community Right to Know Act
ES&H	environment, safety, and health
IDT	Interdisciplinary Team
ISMS	Integrated Safety Management System
ISO	International Organization for Standardization
M&O Contract	management and operating contract
MSDS	material safety data sheet
NEPA	National Environmental Policy Act
PHS	primary hazard screening
QA	quality assurance
QAPP	Quality Assurance Program Plan
RCRA	Resource Conservation and Recovery Act
SHEAC	Safety, Health & Environment Action Committee
SME	subject matter expert
SNL	Sandia National Laboratories
SNL/CA	Sandia National Laboratories, California
SNL/NM	Sandia National Laboratories, New Mexico
USC	United States Code

# 1 Program Introduction

Sandia National Laboratories, California (SNL/CA) has maintained functional environmental programs to assist with regulatory compliance for more than 30 years. During 2005, these existing programs were rolled into a formal environmental management system (EMS) that expands beyond the traditional compliance focus to managing and improving environmental performance and stewardship practices for all site activities. An EMS is a set of inter-related elements that represent a continuing cycle of planning, implementing, evaluating, and improving processes and actions undertaken to achieve environmental policy and goals. The SNL/CA EMS Program conforms to the International Standard for Environmental Management Systems, ISO 14001:2004 (ISO 2004). The site received ISO 14001 certification in September 2006.

SNL/CA's EMS Program is applicable to the Sandia, Livermore site only. Although SNL/CA operates as one organizational division of the overall Sandia National Laboratories, the EMS Program is site-specific, with site-specific objectives and targets. SNL/CA (Division 8000) benefits from the organizational structure as it provides corporate level policies, procedures, and standards, and established processes that connect to and support elements of the SNL/CA EMS Program. Additionally, SNL/CA's EMS Program benefits from two corporate functional programs (Facilities Energy Management and Fleet Services Environmental programs) that maintain responsibility for energy management and fleet services for all Sandia locations. Each EMS element is further enhanced with site-specific processes and standards.

Division 8000 has several groups operating at Sandia National Laboratories, New Mexico (SNL/NM). Although these groups, from an organizational perspective, are part of Division 8000, they are managed locally and fall under the environmental requirements specific to their New Mexico location. The New Mexico groups in Division 8000 follow the corporate EMS Program for New Mexico operations.

## 1.1 Integration with Corporate EMS Standards

On June 4, 2008, the Department of Energy (DOE) issued a revised *DOE Order 450.1A, Environmental Protection Program*. Order 450.1A outlines the basic strategy for environmental compliance at DOE facilities. It became effective for all Sandia National Laboratories (SNL) facilities on September 3, 2008 through incorporation into the Sandia management and operating contract. The objectives of Order 450.1A are to implement sound environmental stewardship practices, and to meet or exceed compliance with environmental, public health, and resource protection laws, regulations, and DOE requirements (DOE 2008). The order requires DOE sites to meet these objectives through an environmental management system (EMS) that follows the ISO 14001 framework (DOE 2008). To meet this new requirement, Sandia's corporate EMS program has been modified to the ISO standard and is scheduled for a certification audit in June 2009.

Under the corporate EMS umbrella, each SNL Division implements an EMS program tailored to the characteristics and operations of that division. Because the SNL/CA EMS Program conforms to the ISO 14001 Standard, it already meets the requirements of DOE Order 450.1A as well as the updated corporate program.

## 1.2 SNL/CA EMS Program Mechanics

SNL/CA prepared the *Sandia National Laboratories, California Environmental Management System Program Manual* (EMS Manual) to document and provide a roadmap to its EMS Program. Annually, the SNL/CA EMS Core Team updates the EMS Manual to document the aspects/impacts of current operations, the goals and objectives that respond to these impacts and the EMS changes and improvements that occurred during the year. The EMS Manual represents a point in time. Updated information about the EMS program is added to the Environmental Management Department website. Consequently, the most up-to-date information is typically found on Sandia's website.

The SNL/CA EMS Program encompasses an annual cycle of planning, implementing, assessing, and improving operations in support of site-specific environmental goals. The EMS Program cycle is presented in Figure 1. As shown, the EMS cycle aligns with the budget cycle so that investment and resource requirements can be requested for the next budget year. To provide further detail of the timing of EMS actions throughout the year, an annual EMS calendar is maintained and included as Figure 2.

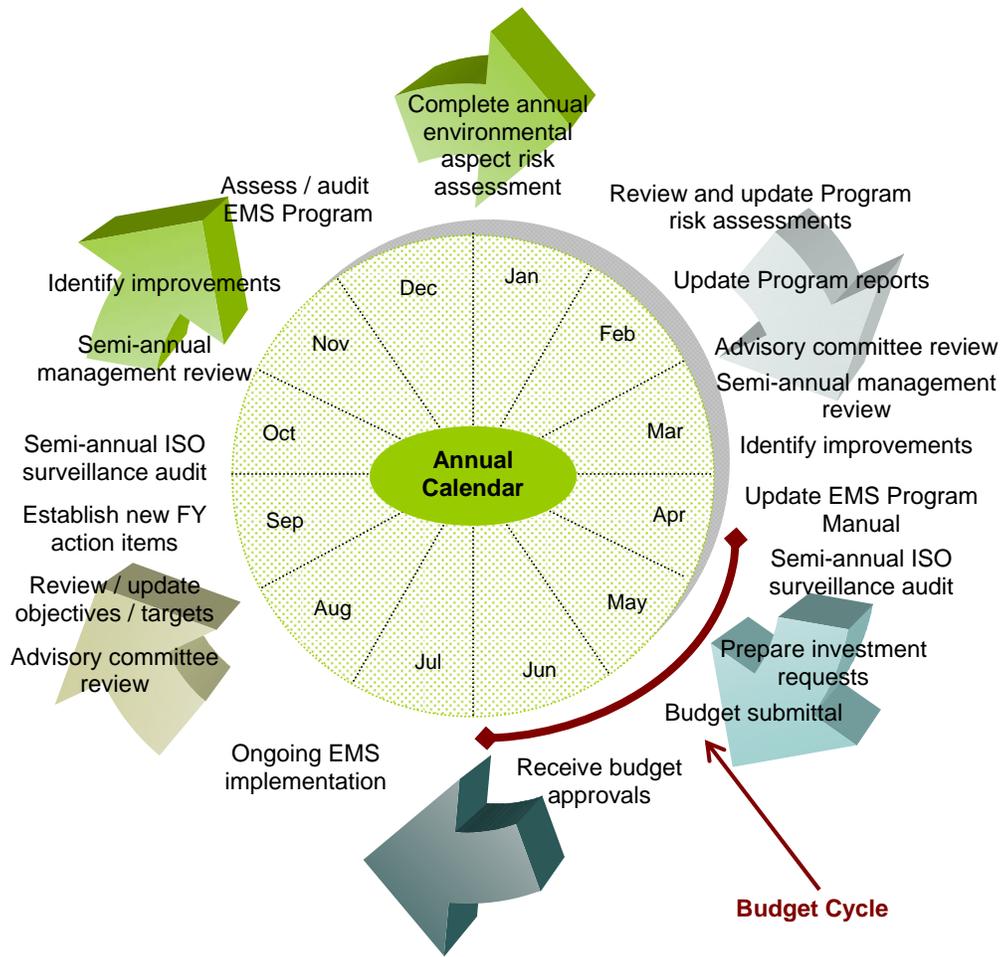


Figure 1 EMS Program Cycle





## 2 SNL/CA Environmental Policies

SNL/CA follows corporate and site-specific environmental policies that are combined with broader environment, safety, and health (ES&H) requirements. The Sandia corporate policy (CPSR400.1) (SNL 2007a) *is to protect and preserve the environment, and to ensure the safety and health of its Members of the Workforce by providing a place of employment that is free from recognized hazards that have the potential to cause physical harm to workers.* Principles outlined in the corporate policy related to environmental management include employee accountability for minimizing impact on the environment and the belief that environmental incidents are preventable and unacceptable. Sandia's ES&H performance objectives also include creating a work environment that strives for zero environmental incidents and zero operations fines, violations, or penalties.

In addition, the SNL/CA Vice President re-issued a Division 8000 ES&H standard of performance statement in January 2007. The statement reinforces individual accountability, environmental stewardship, and regulatory compliance - the basic elements of the corporate ES&H policy (SNL 2007a). The statement stresses the need to move beyond compliance requirements to nurture a positive ES&H culture at all levels of the workforce.

Annually, the SNL/CA EMS Core Team reviews the ES&H standard of performance statement to ensure that it remains aligned with the site vision and the corporate ES&H policy. This review is executed as part of the internal EMS program audit. If needed, the EMS team presents recommendations for revisions to site management during the management review process described in Chapter 17.

### SNL/CA ES&H Standard of Performance

SNL/CA is firmly committed to meeting all corporate and regulatory ES&H policies and requirements that apply to its operations. The application of compliant ES&H principles and practices is considered a fundamental element of everyone's work assignment.

In this regard, SNL/CA commits to:

- **Nurture a safety and health conscious work ethic and culture.** We will all assume responsibility for creating and maintaining a worksite, as well as performing our work, in a manner that respects and supports the safety and health of every individual. SNL/CA believes that all accidents are preventable. We will all strive to create a workplace that is free of accidents and injuries.
- **Be a responsible steward of the environmental resources in our care.** We will integrate environmental risk assessment, planning and impact mitigation into every aspect of our work. SNL/CA programs, operations, processes, and facilities will be planned and managed such that they support environmental objectives and targets to minimize the creation of waste, pollution, and adverse impact on the public and the environment. SNL/CA will remain committed to an efficient and effective Environmental Management System as part of the laboratory's Integrated Safety Management System.
- **Comply with all applicable laws, regulations and permits.** Compliance with the letter and the spirit of ES&H laws and regulations is viewed as the minimum acceptable standard. When necessary and appropriate we will go beyond legal mandates in order to implement more effective approaches and to nurture a positive and learning ES&H culture. SNL/CA is committed to continual improvement in all aspects of our environment, safety, and health performance and commits to establish performance indicators to guide these efforts and measure our progress.

The Standard of Performance Statement resides on the SNL/CA ES&H website at <http://surf.ran.sandia.gov/centers/8500/esh/CA-EnvMgmt/policy> and the Sandia external website at [http://public.ca.sandia.gov/casite/about/community/environmental\\_mgt.php](http://public.ca.sandia.gov/casite/about/community/environmental_mgt.php). It was also made into posters and distributed to the site management team for display in their respective organizations (at their discretion).

## **3 Structure, Responsibilities, and Authorities**

### **3.1 Management Structure**

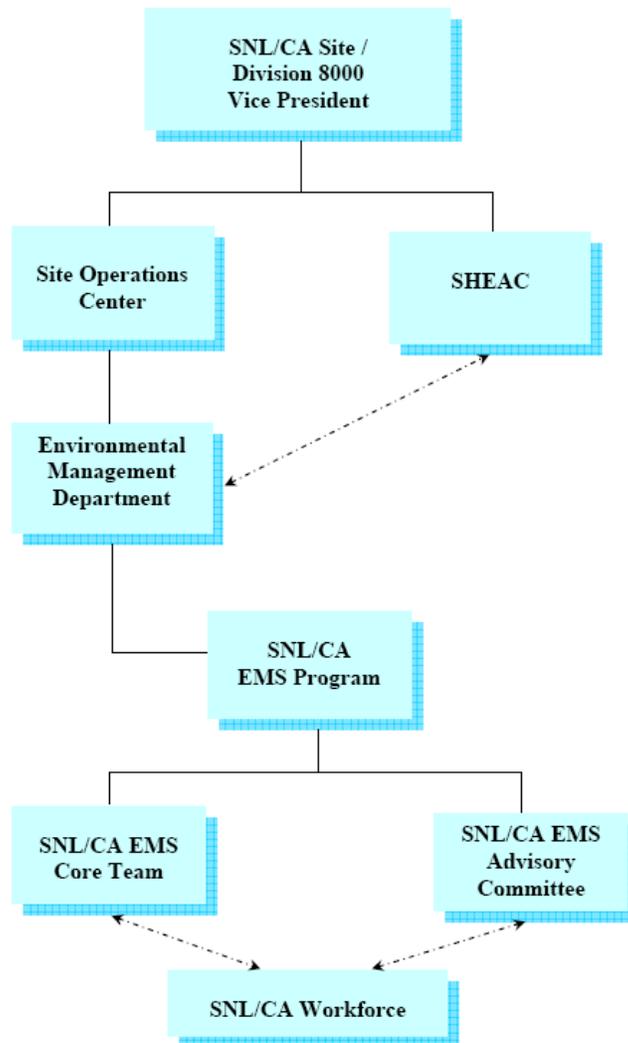
The management structure for SNL/CA's EMS Program is depicted in Figure 3. As shown, the EMS Program is implemented through the Environmental Management Department under the Site Operations Center. Site Operations is one of six centers at SNL/CA reporting to the SNL/CA (Division 8000) Vice President. The site Vice President oversees the Safety, Health, & Environment Action Committee (SHEAC) comprised of the site vice president and center directors. SHEAC provides leadership and strategic management oversight of ES&H for Division 8000, and validates and approves the site EMS Program. The SNL/CA EMS Core Team manages day-to-day implementation and maintenance of the EMS Program. An advisory committee consisting of representatives from various functional areas also supports the EMS Program.

### **3.2 Key Responsibilities**

SNL/CA personnel with key responsibility for the EMS Program include the site Vice President, the Director of Site Operations, the Level II Manager for ES&H, Facilities, and Security, the Manager for the Environmental Management Department, and the environmental functional program leads. The site Vice President holds overall responsibility for the success of the SNL/CA EMS Program and establishes the ES&H standard of performance for all site operations. The Director, Level II Manager, and Department Manager are responsible for providing the appropriate resources to implement and maintain the EMS, functional programs, and site infrastructure to support EMS objectives and targets. The Department Manager also serves as the designated management representative for the EMS. The functional program leads are responsible for day-to-day management of EMS elements and for assisting the site workforce in meeting established objectives and targets. The Environmental Programs Representative serves as an environmental liaison to the workforce. SNL/CA personnel assigned to each job function are listed in Table 2.

### **3.3 Authorities**

EMS authorities at SNL/CA are defined in an internal memorandum issued by the Division 8000 Vice President on November 13, 2008. Authorities are defined for all levels of the workforce from the site VP, directors, and managers, to the basic worker. A copy of the authorities memorandum is provided in Figure 4.



**Figure 3 SNL/CA EMS Management Structure**

**Table 2 SNL/CA EMS Key Personnel, 2009**

Job Function or Title	Name
	Paul Hommert (through June 09)
Vice President, SNL/CA (Division 8000)	Rick Stulen (after June 09)
Director, Site Operations	Pat Smith
Level II Manager, ES&H, Facilities, and Security	Ed Cull
Department Manager, Environmental Management	Gary Shamber
Designated Management Representative	Gary Shamber
Environmental Programs Representative	Deanna Dicker
<b>Functional Program Leads:</b>	
Air Quality	Leslee Gardizi
Environmental Monitoring and Restoration	Robert Holland
Environmental Planning and Ecology	Barbara Larsen
Hazardous Materials Management	Mark Brynildson
Pollution Prevention and Waste Minimization	Janet Harris / Laurie Farren
Waste Management	Mark Brynildson

Figure 4 SNL/CA EMS Authorities and Responsibilities



date: Nov 13, 2008  
to: Division 8000 / CA Site Members of the Workforce

from: Paul Hommert, 8000, MS 9001

subject: Personal Authorities and Responsibilities regarding the SNL/CA Environmental Management System (EMS).

SNL/CA's Environmental Management System (EMS) is ISO14001:2004 certified. Certification requires that roles, responsibilities and authorities of persons working for or on behalf of the EMS be identified and approved. This memorandum constitutes this identification and approval by me. Please direct questions and concerns to the site EMS Management Representative, Gary Shamber, 4-2237.

Vice President	<ul style="list-style-type: none"><li>○ Endorse and communicate the site environmental standards of performance,</li><li>○ Set the tone and priority, and demonstrate full commitment and support to the EMS and the maintenance of ISO14001 certification,</li><li>○ Communicate the site's environmental stewardship commitment to the local community as opportunities to do so are presented,</li><li>○ Provide annual delegation of authority for the generation and submission of required environmental reports, documents and payment of fees.</li></ul>
Director, Site Operations	<ul style="list-style-type: none"><li>○ Ensure adequate budget and resources for EMS and the maintenance of the site ISO14001 certification.</li></ul>
Division ES&H Committee (SHEAC) (VP and site Directors)	<ul style="list-style-type: none"><li>○ Review and approve proposed changes to environmental policies or practices,</li><li>○ Promote site awareness of environmental policies and issues,</li><li>○ Champion a culture of environmental stewardship as the way of conducting business,</li><li>○ Approve site environmental goals, objectives</li></ul>

	<p>and targets,</p> <ul style="list-style-type: none"> <li>○ Review environmental performance and issues as required by ISO14001.</li> </ul>
EMS Management Representative	<ul style="list-style-type: none"> <li>○ Ensure that an EMS is established, implemented and maintained in accordance with ISO14001,</li> <li>○ Annually develop goals, objectives and targets (reflecting site operations) aimed at reducing environmental risks and impacts,</li> <li>○ Annually report to site senior management (SHEAC) on the performance and status of the site EMS,</li> <li>○ Recommend improvements of the site EMS.</li> </ul>
Manager, Environmental Management	<ul style="list-style-type: none"> <li>○ Provide effective management of site environmental programs,</li> <li>○ Direct the environmental programs towards meeting approved environmental goals, objectives and targets.</li> </ul>
Procurement & Purchasing Management	<ul style="list-style-type: none"> <li>○ Develop, maintain and execute processes and procedures that support the procurement of environmentally supportive (friendly) products and services.</li> </ul>
Facilities Management	<ul style="list-style-type: none"> <li>○ Develop, maintain and execute processes and procedures that support sustainable design principles in facilities design, construction and operations,</li> <li>○ Develop, execute and maintain processes and procedures that minimize the environmental impacts of site and building construction and maintenance.</li> </ul>
All Managers	<ul style="list-style-type: none"> <li>○ Assure operations remain compliant with all applicable environmental laws and requirements,</li> <li>○ Develop, execute and maintain processes and procedures that minimize the production of waste (all types), minimize air and water pollutant emissions, promote water and energy conservation and encourage procurement of environmentally friendly products and services,</li> <li>○ Promote environmental awareness and best practices.</li> </ul>

<p>Subject Matter Experts, ES&amp;H Coordinators, and Environmental Programs Representative</p>	<ul style="list-style-type: none"><li>○ Assist members of the workforce in the environmental planning, analysis and execution of projects and activities to reduce environmental impacts and risks.</li></ul>
<p>Members of the Workforce</p>	<ul style="list-style-type: none"><li>○ Comply with all environmental laws and requirements,</li><li>○ Perform all operations and activities such that they support site environmental goals, objectives and targets,</li><li>○ Refrain from participating in operations or activities that are non-compliant with environmental laws and requirements,</li><li>○ Report all environmentally non-compliant operations or activities,</li><li>○ Suspend operations and activities they observe to be non-compliant with environmental laws and requirements.</li></ul>

Distribution:  
SNL/CA Members of the Workforce

## 4 Environmental Aspects

An environmental aspect is an element of an organization's activities, products, or services that can interact with the environment. Simply put, an environmental aspect is a pathway for an environmental impact, either beneficial or adverse. For 2009, the EMS Core Team reviewed the previous environmental aspects identified for SNL/CA to reaffirm their applicability to current operations. One aspect, universal waste, a subset of hazardous waste, was combined with the hazardous waste aspect. All others were reaffirmed as applicable to current operations. SNL/CA's environmental aspects are presented in Table 3 along with the specific site activities that correspond to each aspect.

**Table 3 SNL/CA Environmental Aspects**

<b>Environmental Aspect</b>	<b>Site activity</b>
Water discharges	office operations, medical operations, laboratory and test activities, facilities construction and deconstruction, exterior maintenance and operations, building maintenance and operations, general environmental operations
Air emissions	laboratory and test activities, facilities construction and deconstruction, exterior maintenance and operations, building maintenance and operations, onsite receiving and transportation, offsite transportation
Land use	general environmental operations, facilities construction and deconstruction, exterior maintenance and operations
Material procurement and use	office operations, medical operations, laboratory and test activities, facilities construction and deconstruction, exterior maintenance and operations, building maintenance and operations, general environmental operations
Hazardous materials	medical operations, laboratory and test activities, facilities construction and deconstruction, exterior maintenance and operations, building maintenance and operations, security operations
General transportation	onsite receiving and transportation, offsite transportation, security operations
Radioactive and mixed waste	laboratory and test activities
Hazardous waste	medical operations, laboratory and test activities, facilities construction and deconstruction, exterior maintenance and operations, building maintenance and operations, security operations, office operations
Biological agents	laboratory and test activities
Radiological materials	laboratory and test activities
Contaminated sites	general environmental operations
Solid waste (non-hazardous)	office operations, medical operations, laboratory and test activities, facilities construction and deconstruction, building maintenance and operations, security operations, onsite receiving and transportation
Legacy asbestos	facilities construction and deconstruction, exterior maintenance and operations, building maintenance and operations
Natural gas use	office operations, medical operations, laboratory and test activities
Water use	office operations, medical operations, laboratory and test activities, exterior maintenance and operations, facilities construction and deconstruction, building maintenance and operations

Hazardous material transportation	onsite receiving and transportation, offsite transportation
Electricity use	office operations, medical operations, laboratory and test activities
Fire	emergency event
Earthquake	emergency event

## 4.1 Significant Environmental Aspects

Significant environmental aspects for SNL/CA were identified through the risk ranking process described in Section 5.3. The site's significant aspects are those with the highest risk score under normal operations: water discharges, air emissions, land use, general transportation, and hazardous waste. Table 4 provides the complete list of SNL/CA aspects for 2009 along with the ranking score from the risk assessment process for both normal operations and off-normal events. Significant environmental aspects are highlighted in bold. The risk ranking for off-normal events is also shown in Table 4. Although only one of the highest ranked aspects in off-normal situations (highlighted in italics) is categorized as a significant aspect, all of these off-normal high risks are addressed during the establishment of action items. Table 5 shows the changes in SNL/CA's significant environmental aspects between 2008 and 2009.

**Table 4 SNL/CA Environmental Aspects**

Aspect	Ranking Score <sup>a</sup>		Aspect	Ranking Score <sup>a</sup>	
	Normal	Off-Normal		Normal	Off-Normal
<b>Water discharges</b>	<b>12.6</b>	20	Water use	5.4	18
<b>Air emissions</b>	<b>12</b>	8	<i>Radioactive and mixed waste</i>	5	42
<b>Land use</b>	<b>11</b>	15	<i>Biological agents</i>	5	52
<b>General transportation</b>	<b>11</b>	1	Natural gas use	5	21
<i>Hazardous waste</i>	<i>9.6</i>	45	Electricity use	5	11
Hazardous materials	7	13	<i>Legacy asbestos</i>	4	34
Material procurement and use	6.3	1	<i>Hazardous material transportation</i>	3.6	44
Radioactive materials	6	24	EMERGENCY ASPECTS		
Solid waste (non-hazardous)	5.5	10	Fire	0	22
Contaminated sites	5.5	0	Earthquake	0	26

<sup>a</sup>See Section 5.3 for description of methodology used to rank environmental aspects.

**Table 5 Change in Significant Environmental Aspects Between 2008 and 2009**

2008 Significant Aspects	2009 Significant Aspects
Water discharges	Water discharges
Air emissions	Air emissions
Land use	Land use
Material procurement and use	General transportation
Universal waste	Hazardous waste
Hazardous materials	

## 5 Quality Assurance and Risk Management

The Sandia Corporate Quality Assurance (QA) Program, defined in CG 100.5 (SNL 2009b) is implemented in California through the Sandia National Laboratories Division 8000 QA Program. The Division 8000 QA Program establishes the quality management system for planning work, evaluating work, implementing controls, performing work, and improving processes. The Division QA Program directs all SNL/CA departments to evaluate the hazards associated with their activities using the ISMS primary hazard screening (PHS) software tool. It also requires each department to perform activity or program risk assessments in order to determine the formality that must be used in managing these department activities or programs. Additionally, SNL/CA's Environmental Management Department completed a third quality-related evaluation, a risk ranking of EMS aspects to assist the department in focusing EMS Program efforts and resources on those aspects that represent the greatest risks to the site. Figure 5 shows the quality assurance process for the Environmental Management Department.

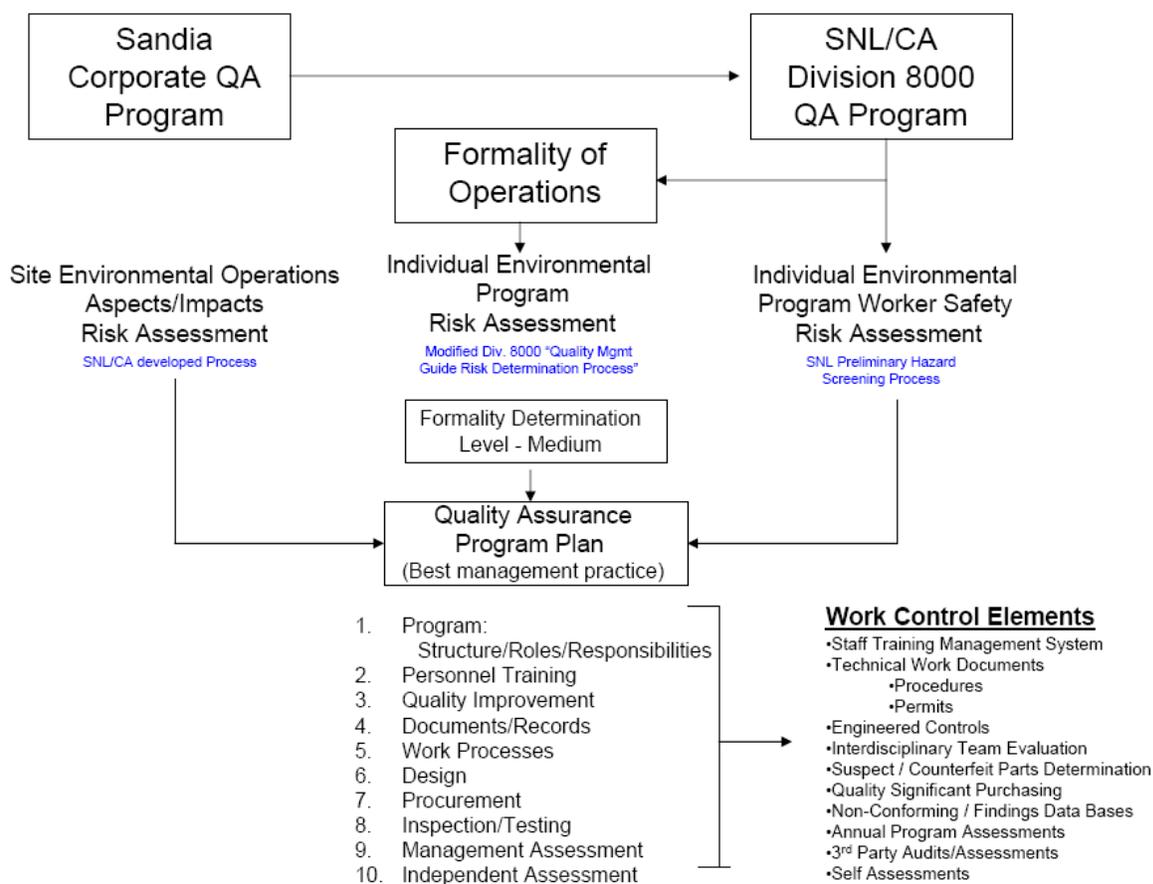


Figure 5 Environmental Management Department QA Process

## **5.1 Identifying and Managing Risk to Environmental Management Personnel**

The execution of each of the six EMS environmental programs introduces personal risks to the staff performing the various actions of these programs. SNL/CA uses the corporate PHS software tool as the first step in managing risk to environmental management personnel. The PHS assists action owners in identifying hazards using a detailed set of questions about all aspects of environment, safety, and health. The PHS software generates a hazard evaluation based on the answers provided, and identifies training requirements and safety controls needed to protect the workforce. Each functional environmental program maintains a program-specific PHS to manage the safety risks associated with program activities.

## **5.2 Identifying and Managing Environmental Program Risk**

The Environmental Management Department completed a formality determination to identify and manage risk associated with each SNL/CA environmental program. The formality determination is required and outlined in the Division QA Program. In general, a formality determination is made by conducting a risk assessment to identify the risk category of a particular activity, or in this case, program. Under the Division QA Program, programs that fall within the high-risk category require work-specific quality assurance plans. Programs that fall within the medium risk category require supplemental controls as outlined in one of four quality management guides.

The formality determination for the Environmental Management Department was completed by assessing the unique program risks associated with each of the six environmental programs. These assessments followed the Division 8000 process, which is a modified version of the corporate process. The results of the assessments show that risks associated with environmental programs fall within the low and medium risk categories. Department activities fall within the Exemplary Operations guide and the use of quality best practices as supplemental controls. Although not required, the Environmental Management Department prepared a department-specific quality assurance plan as its quality best practice supplemental control.

## **5.3 Identifying and Managing Risk Associated with Environmental Aspects**

Annually, the EMS Core Team ranks the environmental aspects identified through the EMS Program to evaluate the risks of SNL/CA operations. Environmental aspects are ranked first under normal operating conditions using a modified risk assessment process that accounts for existing controls, compliance programs, and EMS improvements made during the previous year. Each aspect is evaluated against nine exposure pathways and rated on an impact scale from zero to 3 (negligible to high consequence). The resulting risk score is then adjusted (either up or down) to account for changes that occurred in the previous year in funding, resources, knowledge, or activity level gained or lost. Figure 6 shows the assessment matrix for one

environmental aspect under normal operating conditions. A second assessment of each aspect is performed for a plausible off-normal event (determined by the core team and listed for each aspect) using a similar risk assessment process with the addition of a probability index of zero to 4 (zero to very high probability of an occurrence). Figure 7 shows the assessment matrix for an environmental aspect for an off-normal event. Ranking results are compiled and presented in Figure 8. Figure 9 graphically shows a summary of the ranking assessment for both normal operations and off-normal events. As shown, the highest risk aspects associated with normal operations are different from those identified for off-normal events.

The results of the aspects risk analysis are used to validate the resources applied to the environmental program that manages those risks. The results are also used to help establish the set of actions for the year that are designed to:

- Reduce the impacts of high-risk normal operations;
- Reduce the probability of high-risk off-normal events;
- Reduce the consequences of high-risk off-normal events should they occur.

## 5.4 Quality Assurance Program Plan

The Environmental Management Department QA Program Plan (QAPP), dated March 23, 2006 documents the activities that are vital to assuring the quality of work performed by the department. It applies to all environmental programs within the department. Although not required by the formality determination, the QAPP was selected as the quality best practice to manage medium risk category activities and to ensure consistent application of quality practices for functional environmental programs as well as for the EMS Program. The QAPP addresses the ten QA criteria of an effective quality program identified by DOE.

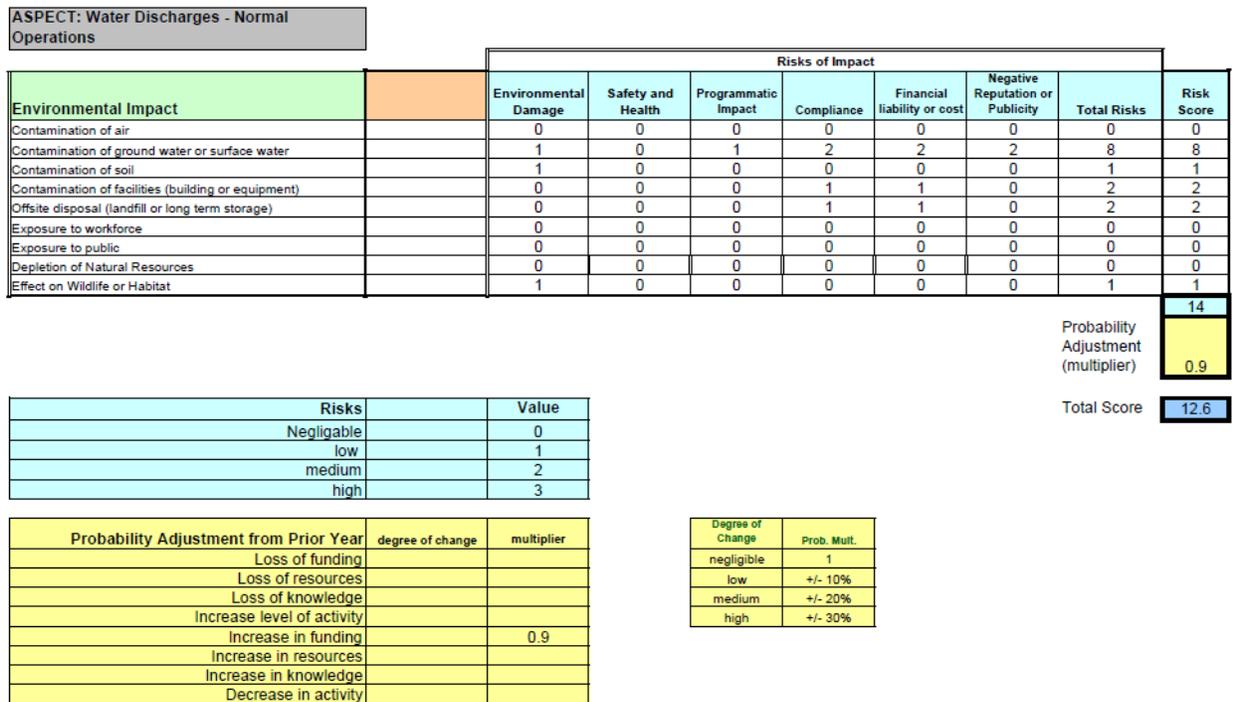
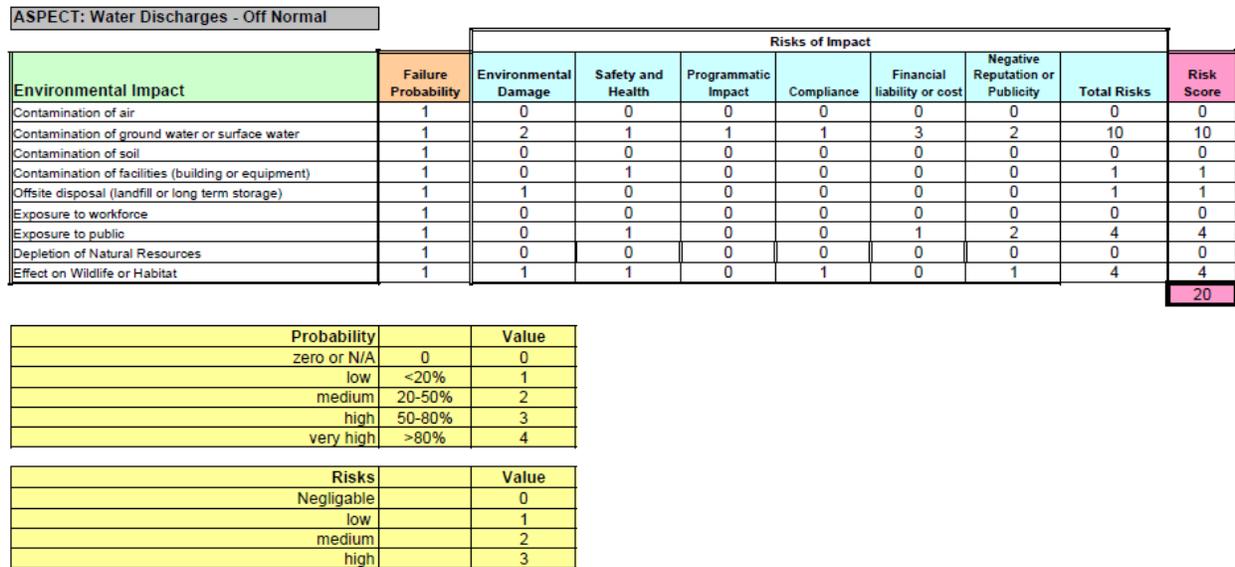


Figure 6 Aspect Ranking Example - Normal Operations



**Off Normal Scenario:** An discharge from operations to the sanitary sewer that negatively affects operations at the Livermore sewer plant.

Figure 7 Aspect Ranking Example - Off-Normal Event

Aspects (Top 5 Significant in Red)	Contamination of Air		Contamination of Ground Water or Surface Water		Contamination of Soil		Contamination of Facilities (bldgs or equip.)		Offsite Storage(landfill or long term)		Exposure to Workforce		Exposure to Public		Depletion of Natural Resources		Effect on Wildlife and Habitat		Total Impact Score - Normal Operations	Probability Multiplier due to change from prior year baseline.	Adjusted Impact Score - Normal Operations	Rank - Top 5 Significant Identified in Red	Total Impact Score - Off Normal Event
	N	ON	N	ON	N	ON	N	ON	N	ON	N	ON	N	ON	N	ON	N	ON					
Air Emission	8	6	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	12	1	12	2	8
Legacy Asbestos	1	4	0	0	0	0	3	8	0	4	0	9	0	9	0	0	0	0	4	1	4	12	34
Biological Agents	2	0	0	0	0	0	0	11	0	0	3	15	0	15	0	0	0	11	5	1	5	10	52
Contaminated Sites (Areas)	0	0	3	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1.1	5.5	8	0
Water Discharges	0	0	8	10	1	0	2	1	2	1	0	0	0	4	0	0	1	4	14	0.9	12.6	1	20
Hazardous Material	0	0	0	0	0	0	1	0	0	0	4	12	2	1	0	0	0	0	7	1	7	5	13
Hazardous Waste	0	0	0	6	0	0	0	6	4	16	4	5	0	12	0	0	0	0	8	1.2	9.6	4	45
Universal Waste	0	0	0	0	0	0	0	3	3	0	0	4	2	3	0	0	0	0	5	0.9	4.5	11	10
Hazardous Material Transportation	1	4	0	7	0	7	0	5	0	1	0	14	2	0	1	1	0	5	4	0.9	3.6	13	44
General Transportation	2	-3	2	0	0	0	1	0	1	1	1	5	1	-1	2	-1	1	0	11	1	11	3	1
Solid Waste (Non-Hazardous)	0	0	0	0	0	0	0	0	3	12	0	0	3	0	-1	-2	1	0	6	1	6	7	10
Radiological Materials	0	0	0	5	0	6	4	5	0	3	2	5	0	0	0	0	0	0	6	1	6	7	24
Radiological and Mixed Waste	0	6	0	0	0	6	0	7	5	12	0	0	0	9	0	0	2	5	1	5	10	42	
Material Procurement and Use	1	1	1	1	1	0	0	0	3	7	0	0	0	1	1	4	0	1	7	0.9	6.3	6	16
Land Use	0	2	1	1	1	0	0	0	0	2	1	2	0	5	0	1	8	2	11	1	11	3	15
Natural Gas Use	4	3	0	1	0	0	0	0	0	3	0	14	0	0	1	0	0	0	5	1	5	10	21
Electricity Use	2	2	0	1	0	0	0	0	0	2	7	0	0	1	1	0	0	5	1	5	10	11	
Water Use	0	0	2	2	0	1	0	7	0	1	0	6	0	0	2	1	2	0	6	0.9	5.4	9	18
Emergency Aspects																							
Site Fire		8		2		0		0		0		4		6		0		2					22
Seismic Event		2		1		1		10		6		5		1		0		0					26

Figure 8 Environmental Aspect Ranking Results, 2008

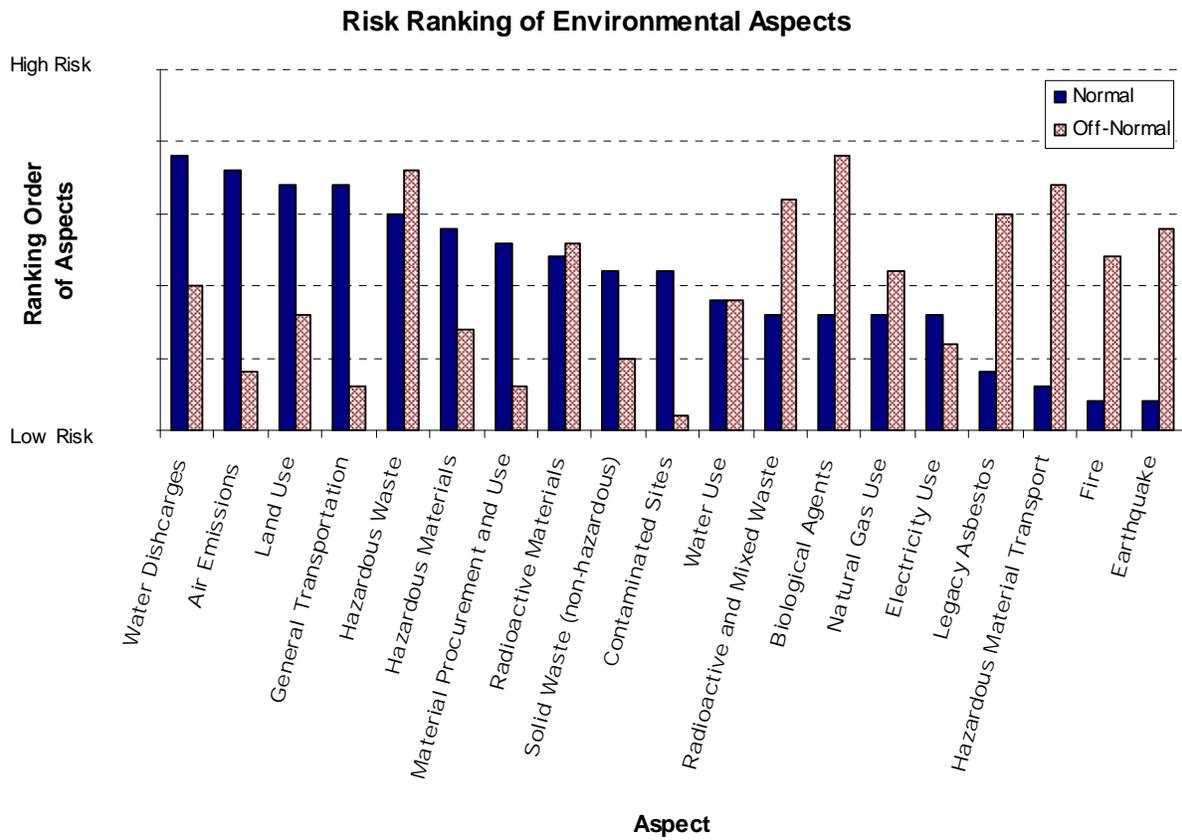


Figure 9 SNL/CA Aspect Ranking Summary

## 6 Objectives and Targets

Setting objectives and targets, and establishing actions to help achieve these is a continuous cycle as shown in Figure 10. Objectives and targets provide a measure of environmental performance and the effectiveness of an EMS. SNL/CA's objectives support efforts to reduce potential environmental risk from site operations and enhance environmental stewardship. Our targets are detailed measurable performance requirements directly linked to site objectives. Each year, the EMS Core Team reviews EMS objectives and targets and evaluates the sites progress in meeting them. Targets are modified and new action items are established for the upcoming calendar year. As part of this review process, the Core Team identifies additional resources needed to implement current or future action items and submits an investment request through the budget cycle.

The site's senior management team (VP and directors) are responsible for approving new EMS objectives and targets, and validating existing objectives and targets annually. The management team approved and validated the 2009 EMS objectives and targets on October 30, 2008.

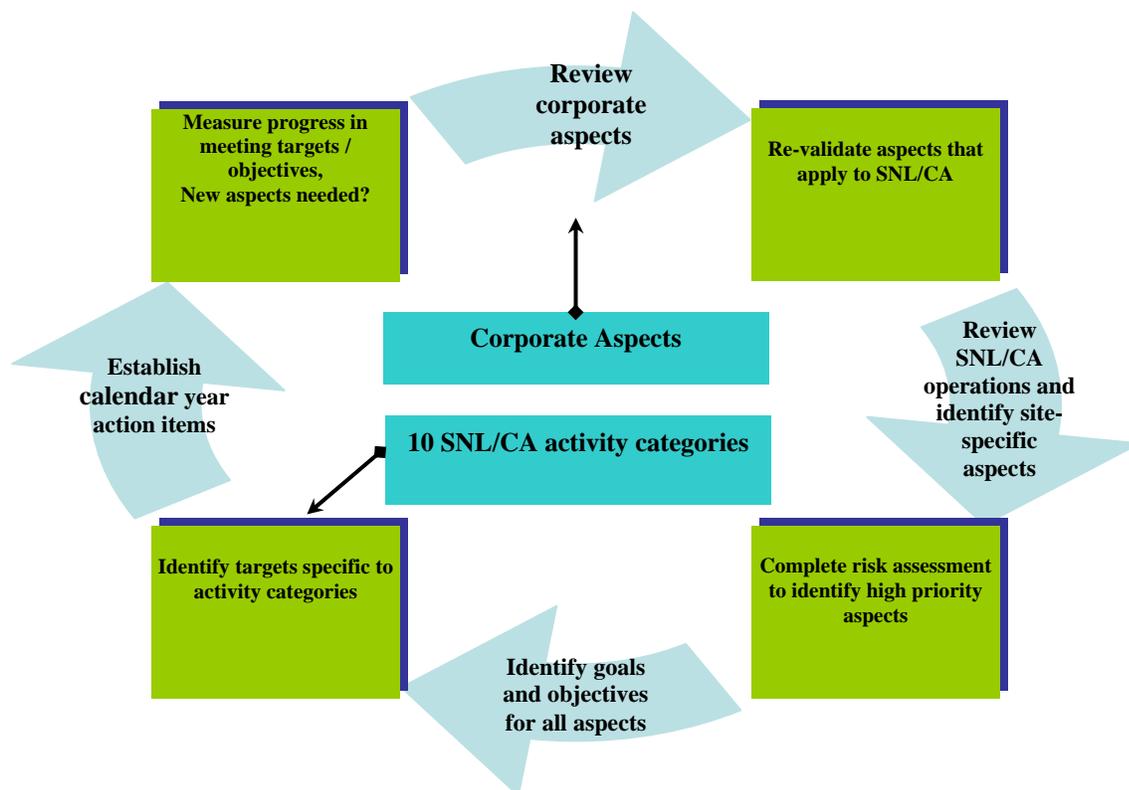


Figure 10 Cycle of Setting and Evaluating EMS Objectives and Targets

## 6.1 Defining Objectives

In 2006, the EMS Core Team established broad, multi-year objectives for environmental aspects applicable to SNL/CA activities. The inclusion of objectives for each aspect rather than only significant aspects serves as a best business practice by providing an expectation of overall environmental stewardship across the spectrum of activities conducted on site. An additional objective for general environmental operations was also established in 2006.

Each EMS objective was formed around the concept that the site’s negative environmental impacts cannot be eliminated, in most cases, but should be minimized to the extent practical. For example, site operations will continue to generate waste, use hazardous materials, etc, but these can be managed to reach a minimum level appropriate to the level of operations and mission of the site. SNL/CA EMS objectives are shown in Table 6. Objectives associated with significant environmental aspects are highlighted in green.

**Table 6 SNL/CA EMS Objectives**

<b>Environmental Aspect/Area</b>	<b>Objective</b>
General Environmental Operations	Provide exceptional environmental management for the SNL/CA site.
Water Discharges	Minimize the volume and contamination of sewer water. Minimize the volume and pollution of storm water runoff.
Air Emissions	Minimize air emissions related to operations and transportation with particular emphasis on Spare-the-Air days.
Land Use	Enhance the natural habitat. Design and manage all buildings and facilities using “green” principles.
General Transportation	Minimize the use of vehicles by members of the workforce.
Hazardous Waste	Minimize the generation of hazardous waste.
Hazardous Materials	Minimize the use of hazardous materials.
Material Procurement and Use	Procure and use environmentally friendly products and materials.
Radiological Material	Minimize the use of radiological materials.
Radioactive and Mixed Waste	Minimize the generation of radioactive and mixed waste.
Biological Agents	Minimize the use of biological materials.
Contaminated Sites	Minimize the environmental impacts of site contaminated areas.
Legacy Asbestos	Reduce site legacy asbestos material.
Solid Waste (non-hazardous)	Minimize the quantity of landfill waste through reduced consumption and/or reuse/recycling.
Hazardous Material Transportation	Minimize the potential environmental effects of hazardous material due to transportation.
Natural Gas Use	Minimize site natural gas consumption.
Water Use	Minimize site water consumption.
Electrical Use	Minimize site electrical consumption.
Fire	Minimize the environmental effects of a site fire emergency.
Earthquake	Minimize the environmental effects of a site seismic event.

## 6.2 Defining Targets and Assigning Actions

Annually, the EMS Core Team establishes new targets and updates existing targets to support site environmental objectives. At a minimum, targets (or actions) are established for significant environmental aspects. The Core Team identifies specific actions, timeframes, and personnel assignments needed to meet these targets. Completion of actions and progress towards meeting established targets is tracked using standard project management software (i.e., FastTrack Schedule). Project management schedules for significant environmental aspects are presented in figures 11 through 15.

The EMS Core Team may also establish targets for environmental aspects that are not categorized as significant to support specific environmental program activities (e.g., activities that receive special funding, support corrective actions, or implement site initiatives). For example, in 2009, the Core Team established a target to increase the use of bio-based products by 25% by 2010, using 2008 as the baseline (aspect = material procurement and use; objective = procure and use environmentally friendly products and materials). Actions to support targets not associated with significant environmental aspects are incorporated into routine environmental program activities and tracked to completion by functional program leads. The complete list of targets for 2009 is provided in Appendix A.













	Activity Name	Assigned To	Start Date	Finish Date	% Complete	2009												
						F	M	A	M	J	J	A	S	O	N	D		
1	Hazardous Waste																	
2	Objective: Minimize the generation of hazardous waste																	
3	Target: No current target																	
4	Conduct an evaluation to determine if less expensive to use an oil recycler for management of waste oil and oil filters.	Harris	12/1/08	6/30/09	0.0%													
5	Conduct an evaluation of different toner cartridge recyclers to determine best option for SNL/CA.	Harris	1/29/09	6/30/09	0.0%													
6	Investigate how SNL/NM and LLNL manage contractor generated hazardous waste	Larsen	6/30/09	6/30/09	100.0%													
7	Review and modify contract verbiage (as needed) to include sub-contractor responsibilities for managing their hazardous waste	Larsen	6/30/09	9/30/09	100.0%													
8	Change the process for managing empty aerosol containers as scrap metal instead of hazardous waste	Harris	1/30/09	1/30/09	100.0%													
9	Recall flammable compressed gas dusters.	Harris	11/14/08	11/20/08	100.0%													
10	Communicate to MOW the nonflammable type of compressed gas dusters available for purchase that can be managed as scrap metal.	Harris	11/14/08	11/20/08	100.0%													
11	Modified the process used to recycle lead acid batteries to ship directly to recycler instead of through the TSDF	Harris	3/31/09	3/31/09	100.0%													
12	Change process to manage lead metal as scrap metal instead of hazardous waste.	Harris	10/31/08	10/31/08	100.0%													
						F	M	A	M	J	J	A	S	O	N	D		

Figure 15 Hazardous Waste Objectives and Actions

## 7 Emergency Preparedness and Response

SNL/CA has an established Emergency Plan (SNL/CA 2008d) and procedures to provide an effective and timely response to emergency conditions. The site's Emergency Management Program was established in accordance with a separate DOE order, *Order 151.1C, Comprehensive Emergency Management System* (DOE 2005). SNL/CA's Emergency Plan establishes guidelines and procedures to mitigate the potential consequences of an operational emergency. The Emergency Management Program maintains implementing procedures for all assigned roles that support emergency events on site. SNL/CA conducts annual training exercises to validate elements of the Emergency Management Program. Routine training drills and communication tests are also completed. The Emergency Plan and Emergency Plan Implementing Procedures are available to the site workforce on SNL/CA's web site at <http://surf.ran.sandia.gov/centers/8500/security/em>.

Emergency response actions support our EMS Program by managing and mitigating the potential environmental risk from site operations. During site emergencies, members of the Environmental Management Department provide support with hazardous materials spill response and clean-up. Through these efforts, potential long-term environmental effects are avoided or minimized. The Chemical Inventory System, managed by the Hazardous Material Management Program, one of the six environmental programs, provides invaluable information in support of the Emergency Management Program.

## 8 Environmental Programs

SNL/CA maintains an Environmental Management Department that manages six functional program areas supporting the site EMS Program. The program leads from each of these six programs are part of the EMS Core Team responsible for developing, implementing, and modifying the site EMS. Functional program areas are:

- Air Quality
- Environmental Monitoring
- Environmental Planning and Ecology
- Hazardous Materials Management
- Pollution Prevention and Waste Minimization
- Waste Management

The program lead for each functional area prepares an annual report that provides detailed information about all aspects of program operations. The program reports are provided in Appendix B and include the following:

- A detailed summary of program activities
- Program drivers
- Operational controls
- Documents produced
- Job descriptions, qualifications, and training
- Performance measures
- Quality assurance / program risk assessment
- Program assessments
- Accomplishments in the last 12 months
- Trends
- Goals and objectives (short-term)

### 8.1 Air Quality

The Air Quality Program provides compliance assistance for all nonradiological air emission sources at SNL/CA. Program staff review all directives, laws, and regulations relevant to air emissions for applicability to the site. This program manages the air permit process, from the initial steps of preparing permit applications through implementation of permit conditions and annual renewals. The Air Quality Program is responsible for evaluating proposed projects, assessing chemical use, and assessing emissions of all criteria pollutants and toxic air contaminants.

The Air Quality Program assists the site in complying with the Clean Air Act, California Air Resources Board (CARB) regulations, and local Bay Area Air Quality Management District (BAAQMD) regulations.

## 8.2 Environmental Monitoring

The Environmental Monitoring Program routinely monitors wastewater, storm water, and groundwater systems at SNL/CA to assess the effect of site operations on the public and local environment. Storm water is evaluated for general water quality, and for non-radiological and radiological constituents. Wastewater effluent resulting from site operations is monitored for non-radiological constituents. Liquid effluent control systems are operated and maintained by the program to capture wastewater from laboratory activities for analysis prior to release to the sanitary sewer. Groundwater is sampled and analyzed for non-radiological and radiological constituents to assess the extent of groundwater contamination from past operations. In addition, monitoring of external radiation at the site perimeter is conducted using thermo luminescent dosimeters. Comparisons are made of site data to offsite dose rates. The program also conducts project specific soil sampling to assess potential soil contamination from past or current operations and implements restoration activities, as needed.

The Environmental Monitoring Program assists the site in complying with federal requirements (Clean Water Act, National Emission Standards for Hazardous Air Pollutants Rule for Radionuclides); state of California requirements (Porter-Cologne Water Quality Act); and state and local permits for storm water and wastewater discharges.

## 8.3 Environmental Planning and Ecology

The Environmental Planning and Ecology Program provides oversight for ecological resource management, site-wide National Environmental Policy Act (NEPA) review, and cultural and historic resource reviews. The program coordinates and oversees wildlife, vegetation, and historic building surveys; prepares routine environmental reports that cross over multiple program areas; and implements the NEPA process.

The Environmental Planning and Ecology Program assists the site in complying with the Endangered Species Act; Migratory Bird Treaty Act; California Endangered Species Act; Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as it applies to wildlife and habitat; National Historic Preservation Act; NEPA; DOE NEPA Implementing Procedures; DOE Order 231.1 Environment, Safety, and Health Reporting; and Executive Order 11990 Protection of Wetlands.

## 8.4 Hazardous Materials Management

The Hazardous Materials Management Program is responsible for tracking hazardous materials (chemical and biological), managing the Material Safety Data Sheets (MSDS) library, providing MSDS information to site personnel, and for regulatory compliance reporting required under various hazardous materials regulations. The program is also responsible for supporting hazardous material safety and information requirements site-wide.

The Hazardous Materials Management Program assists the site in complying with the Emergency Planning and Community Right-to-Know Act and California Right-to-Know

(EPCRA) regulations. The Hazard Communication/Lab Standard of the Occupational Safety and Health Administration is also key to program operations.

## **8.5 Pollution Prevention and Waste Minimization**

The Pollution Prevention and Waste Minimization Program promotes the elimination or reduction of all types of wastes generated at SNL/CA. Program staff work closely with Facilities organizations to establish routine and project specific recycling programs. The program provides guidance for resource and energy conservation and assists in identifying recycled-content products for use throughout the site. Pollution Prevention and Waste Minimization also implements the universal waste program to ensure proper handling and disposal of low-hazard waste such as consumer electronics, mercury wastes, cathode ray tubes, and fluorescent tubes.

The Pollution Prevention and Waste Minimization Program assists the site in complying with the Pollution Prevention Act; Resource Conservation and Recovery Act (RCRA), California Hazardous Waste Source Reduction and Management Review Act; and numerous executive and DOE orders. A complete list of orders is provided in the Pollution Prevention and Waste Minimization Program Annual Report (Appendix B).

## **8.6 Waste Management**

The Waste Management Program manages hazardous, radioactive, and mixed wastes generated by SNL/CA operations. Program personnel collect waste from the point of generation and transfer it to either the Hazardous Waste Storage Facility or the Radioactive Waste Storage Facility for storage, consolidation, and packaging. The program establishes and maintains contracts for offsite treatment and disposal of wastes, manages the RCRA permit process and implements conditions of the permit, conducts process knowledge evaluations to characterize waste types generated from specific operations, and provides training to all SNL/CA waste generators.

The Waste Management Program assists the site in complying with Federal requirements (RCRA, Toxic Substances Control Act, Federal Facilities Compliance Act, FIFRA); State of California requirements (Hazardous Waste Control Law, Medical Waste Management Act); DOE orders for radioactive waste management and packaging and transportation of waste; and the RCRA Part B Permit for SNL/CA.

## 9 Legal and Other Requirements

SNL/CA is subject to many federal, state, and local environmental laws, regulations, and requirements. Sandia operations are also subject to DOE directives identified in Sandia Corporation's contract with DOE for management and operation of Sandia National Laboratories. Sandia is committed to managing all activities in accordance with these policies, directives, and processes within the boundaries of the prime contract, applicable laws, DOE and corporate directives, and best management practices. As part of our mission, we strive to serve our customers by anticipating their needs, meeting their requirements, and exceeding their expectations (SNL 2008a). DOE and Sandia establish an annual performance evaluation plan that outlines the expectations for performance.

### 9.1 Current Requirements

Environmental requirements applicable to SNL/CA operations are detailed in annual program reports prepared for each environmental program area (Appendix B). Table 7 provides a list of primary environmental requirements that are applicable to each environmental aspect. In addition to the requirements listed in Table 8, DOE and Sandia establish a set of operational expectations each year. DOE's expectations of Sandia for 2009 can be found in the *Fiscal Year 2009 Performance Evaluation Plan for Sandia Corporation in the Operation and Management of Sandia National Laboratories* at <https://rproxy.sandia.gov/my/authsec/portal/ilms/default/customer/requirements/satisfaction/laboratoryPerformanceEvaluation>. The 2009 Performance Evaluation Plan includes performance measures for environmental compliance.

**Table 7 Primary Environmental Requirements Associated with Environmental Aspects**

Environmental Aspect	Environmental Requirement
<b>Water discharges (significant aspect)</b>	CPR 400.1.1 ES&H Manual and Supplements
	DOE Order 450.1, Environmental Protection Program
	33 United States Code (USC) §1251, Clean Water Act
	40 Code of Federal Regulations (CFR) 112, Oil Pollution Prevention
	40 CFR 122 - 125, National Pollutant Discharge Elimination System
	40 CFR 129 Toxic Pollutant Effluent Standards and Prohibitions
	40 CFR 403 General Pretreatment Regulations for Existing and New Sources of Pollution
	40 CFR 433 Metal Finishing Point Source Category
	Title 23 California Code of Regulations (CCR), Division 3
	Title 17 CCR Public Health
	California Health and Safety Code (H&S Code), Division 20, Chapter 6.6, California Safe Drinking Water and Toxic Enforcement Act of 1986, Proposition 65

<b>Environmental Aspect</b>	<b>Environmental Requirement</b>
<b>Air emissions (significant aspect)</b>	CPR 400.1.1 ES&H Manual and Supplements DOE Order 450.1, Environmental Protection Program Clean Air Act, 42 USC § 7401 40 CFR 61, National Emissions Standards for Hazardous Air Pollutants, Subpart H California H&S Code, Division 26 California Clean Air Act California Air Resources Board Regulations Bay Area Air Quality Management District Regulations Executive Order (EO) 12843, Procurement Requirements and Policies for Federal Agencies for Ozone-Depleting Substances California H&S Code, Division 25.5 § 38500 et. seq. California Global Warming Solutions Act of 2006
<b>Land use (significant aspect)</b>	CPR 400.1.1 ES&H Manual and Supplements DOE Order 450.1, Environmental Protection Program 42 USC § 4321 et. seq., National Environmental Policy Act 16 USC § 1531 et. seq., Endangered Species Act 16 USC § 703 et. seq., Migratory Bird Treaty Act 33 USC § 1251, Clean Water Act 7 USC § 136, Federal Insecticide, Fungicide, and Rodenticide Act 10 CFR 1022 Compliance with Floodplain and Wetlands Environmental Review Requirements EO 11988 Floodplain Management EO 11990 Protection of Wetlands California Fish and Game Code §§ 2050 – 2068, California Endangered Species Act California Fish and Game Code Biological and Conference Opinion for SNL/CA Operations DOE Order 4700.1 Project Management System DOE Order 413.3 Program and Project Management for the Acquisition of Capital Assets DOE Order 430.2B Departmental Energy, Renewable Energy, and Transportation Management EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management
<b>General transportation (significant aspect)</b>	DOE Order 450.1, Environmental Protection Program Energy Policy Act of 2005 EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management
<b>Hazardous waste (significant aspect)</b>	CPR 400.1.1 ES&H Manual and Supplements GN470075 Guidelines for Waste Generators at SNL/CA DOE Order 450.1, Environmental Protection Program 42 USC § 6901 et. seq., RCRA 42 USC § 6961, Federal Facility Compliance Act 40 CFR 239 – 299, RCRA Implementing Regulations 29 CFR 1910.120, Hazard Communication Standard California H&S Code, Division 20, Chapter 6.5, California Hazardous Waste Control Law California H&S Code, Division 104, Part 14, §§ 117600 -118360, California Medical Waste Management Act Title 22 CCR California Implementing Regulations for RCRA 42 USC § 13101 et. seq., Pollution Prevention Act of 1990 EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management California Hazardous Waste Source Reduction and Management Review Act of 1989 California H&S Code, Division 20, Chapter 6.5, Hazardous Waste Control California H&S Code, Division 20, Chapter 6.5, Waste Minimization Certification 15 USC § 2601 et. seq., Toxic Substances Control Act SNL/CA Hazardous Waste Facility Permit SNL/CA Part B Hazardous Waste Operation Plan

<b>Environmental Aspect</b>	<b>Environmental Requirement</b>
	<p>CPR 400.1.1 ES&amp;H Manual and Supplements            GN470094 Handling Chemicals at SNL/CA            DOE Order 450.1, Environmental Protection Program            42 USC § 11001 et. seq., Emergency Planning and Community Right-to-Know Act            29 CFR 1910.1200 Hazard Communication Standard            29 CFR 1910.1450 Lab Standard            40 CFR 68 Risk Management Plan            EO 12856 Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements</p>
<b>Hazardous materials</b>	<p>DOE Order 151.1C Emergency Management            California H&amp;S Code, Chapter 6.95, California Hazardous Materials Release Response Plans and Inventory Law            EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management            California H&amp;S Code Division 20, Chapter 6.7, Underground Storage Tanks            42 USC § 6901 et. seq. Resource Conservation and Recovery Act (RCRA) (related to underground storage tanks)            40 CFR 280 RCRA Implementing Regulations for Underground Storage Tanks            15 USC § 2601 et. seq., Toxic Substances Control Act            7 USC § 136, Federal Insecticide, Fungicide, and Rodenticide Act</p>
<b>Material procurement and use</b>	<p>CPR 400.1.1 ES&amp;H Manual and Supplements            DOE Order 450.1, Environmental Protection Program            DOE Order 413.3 Program and Project Management for the Acquisition of Capital Assets            EO 12843, Procurement Requirements and Policies for Federal Agencies for Ozone-Depleting Substances            EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management            42 USC § 6901 et. seq., Resource Conservation and Recovery Act (RCRA)</p>
<b>Radiological materials</b>	<p>42 USC § 2011 et. seq., Atomic Energy Act            CPR 400.1.1 ES&amp;H Manual and Supplements            MN471016 Radiological Protection Procedures Manual            DOE Order 450.1, Environmental Protection Program            DOE Order 5400.5, Radiation Protection of the Public and Environment            DOE/EH-0173T, Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance            10 CFR 835, Radiological Protection</p>
<b>Radioactive and mixed waste</b>	<p>CPR 400.1.1 ES&amp;H Manual and Supplements            GN470075 Guidelines for Waste Generators at SNL/CA            DOE Order 450.1, Environmental Protection Program            42 USC § 2011 et. seq., Atomic Energy Act            DOE Order 435.1 Radioactive Waste Management            DOE Order 5400.5 Radiation Protection of the Public and the Environment            42 USC § 6961, Federal Facility Compliance Act            SNL/CA Hazardous Waste Facility Permit            SNL/CA Part B Hazardous Waste Operation Plan            California H&amp;S Code, Division 20, Chapter 6.5, Hazardous Waste Control Law            Nevada Test Site Waste Acceptance Criteria</p>
<b>Biological agents</b>	<p>CPR 400.1.1 ES&amp;H Manual and Supplements            SNL/CA Biohazardous Waste Management Plan            SNL/CA Medical Waste Management Plan</p>
<b>Contaminated sites</b>	<p>CPR 400.1.1 ES&amp;H Manual and Supplements            DOE Order 450.1, Environmental Protection Program            California Regional Water Quality Control Board, San Francisco Bay Region Waste Discharge Requirements</p>
<b>Legacy asbestos</b>	<p>CPR 400.1.1 ES&amp;H Manual and Supplements            DOE Order 450.1, Environmental Protection Program            40 CFR 61, National Emissions Standards for Hazardous Air Pollutants            15 USC § 2601 et. seq., Toxic Substances Control Act</p>

<b>Environmental Aspect</b>	<b>Environmental Requirement</b>
<b>Solid waste (non-hazardous)</b>	DOE Order 450.1, Environmental Protection Program 42 USC § 13101 et. seq., Pollution Prevention Act of 1990 EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management California Public Resources Code § 42961.5, Waste Tire Manifest Program California H&S Code Division 20, Chapter 6.5, § 25211, Appliance Recycling Title 22 CCR Division 4.5, Chapter 16, Recyclable Materials Title 22 CCR, Division 4.5, Chapter 23, Universal Waste Management Title 22 CCR, 66273, California Electronic Waste Recycling Act California Public Resources Code §§ 42490 – 42499, Cell Phone Recycling Act
<b>Hazardous material transportation</b>	CPR 400.1.1 ES&H Manual and Supplements DOE Order 450.1, Environmental Protection Program DOE Order 460.1B Packaging and Transportation Safety 49 CFR - Transportation SNL/CA Transportation Safety Document SNL/CA Transportation Security Plan
<b>Natural gas use</b>	DOE Order 450.1, Environmental Protection Program Energy Policy Act of 2005 DOE Order 430.2B Departmental Energy, Renewable Energy, and Transportation Management EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management
<b>Water use</b>	DOE Order 450.1, Environmental Protection Program DOE Order 430.2B Departmental Energy, Renewable Energy, and Transportation Management EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management
<b>Electricity use</b>	DOE Order 450.1, Environmental Protection Program Energy Policy Act of 2005 DOE Order 430.2B Departmental Energy, Renewable Energy, and Transportation Management EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management
<b>Fire (emergency aspect)</b>	CPR 400.1.1 ES&H Manual and Supplements DOE Order 151.1C Emergency Management
<b>Earthquake (emergency aspect)</b>	CPR 400.1.1 ES&H Manual and Supplements DOE Order 151.1C Emergency Management

## 9.2 Monitoring Requirements

The process for monitoring ES&H requirements is identified in Administrative Procedure (AOP 04-02 (SNL 2007b)). At the corporate level, Sandia monitors DOE directives, DOE Acquisition Regulation activity, Federal Register, and federal, state, and local government publications for regulatory changes and issues applicable to SNL operations. New requirements are communicated to the workforce through established internal mechanisms and incorporated into the Sandia ES&H Manual, a comprehensive document that guides the workforce through the compliance process (SNL 2009a). New requirements are then incorporated into facility- and operation-specific work planning and control documents.

Environmental subject matter experts (SMEs) at SNL/CA monitor state and local issues to augment corporate monitoring. Subscriptions to electronic and paper publications and interactions with regulators are two primary ways that SNL/CA's SMEs stay current on environmental requirements. SNL/CA SMEs work directly with regulating agencies to obtain information on new and changing requirements well in advance of requirements becoming effective. Such advance notice allows the SNL/CA EMS Core Team to identify resources and implement effective and cost efficient processes for compliance. Environmental staff members

attend conferences routinely and participate as members of environmental organizations that publish newsletters and discipline-specific informational materials. Environmental consultants that support Sandia's staff also keep abreast of regulatory changes that may affect their clients.

SMEs at both SNL/CA and SNL/NM interact regularly with their DOE counterparts and regulators. Through these customer and stakeholder interactions, some changes (i.e., executive orders and policies, applicable litigation results, best management practices, etc.) may be identified that are not incorporated into Sandia's Management and Operating Contract (M&O Contract) as formal requirements. Although such changes are not necessarily contract requirements, where appropriate, they are incorporated into the EMS and implemented through functional environmental programs. However, because this process is informal, some changes that may be appropriate may not be captured.

## 9.3 Recent Modifications to Requirements

Table 8 summarizes information from the annual program reports pertaining to new and modified environmental requirements that were implemented in 2008/2009 or are pending.

**Table 8 New and Modified Environmental Requirements, 2008/2009**

Requirement Summary	Effective Date	Driver	Program Modification	Environmental Aspect
Update - DOE Order 450.1A, Environmental Protection Program Outlines the basic strategy for environmental compliance at DOE facilities	June 4, 2008	DOE Order 450.1A	Incorporated into EMS Program	All
DOE Order 430.2B Departmental Energy, renewable Energy and Transportation Management – Requirements for efficient and effective management of energy, water, and vehicle fleets at DOE facilities	February 27, 2008	DOE Order 430.2B	Objectives and targets for energy use, water use, and general transportation incorporated into EMS Program	Water use, general transportation, electricity use, natural gas use, land use,
Authorization from US Army Corp of Engineers for remaining tasks under the Arroyo Seco Improvement Program	September 2008	Clean Water Act	SNL/CA must initiate these tasks over next ten years	Land use
Tentative Order for updated Construction Activities General Permit for hydromodification project requirements, sampling requirements, effluent triggers / limits, notice of intent / storm water pollution prevention plan public review process	Expected in 2009	Clean Water Act	SNL/CA will implement as outlined in the Tentative Order	Water discharges
Update – Electronic Waste Recycling Act of 2003 to include electronic devices with screens less than 4 inches	June 2008	CCR Title 22, Div. 4.5, Chapter 11	Incorporated into universal waste recycling program	Hazardous waste

<b>Requirement Summary</b>	<b>Effective Date</b>	<b>Driver</b>	<b>Program Modification</b>	<b>Environmental Aspect</b>
CARB regulation limits emissions from off-road diesel vehicles with engines equal to or greater than 25 hp	March 1, 2009	CCR Title 13, Section 2449	SNL/CA must adopt idling policy by March 1, 2009, report inventory by April 1, 2009, and reduce emissions from off-road diesel vehicles starting March 1, 2010	Air emissions
CARB regulation limits emissions from portable diesel equipment with engines equal to or greater than 50 hp.	January 1, 2010	CCR Title 17, Section 9316	SNL/CA must not purchase Tier 0 engines starting January 1, 2010 and must reduce emissions from existing engines starting January 1, 2013	Air emissions
CARB regulation limits emissions from on-road diesel trucks with GVWR greater than 14,000 pounds.	January 31, 2010	CCR Title 13, Section 2025	SNL/CA must report inventory by January 31, 2010 and reduce emissions from on-road trucks starting January 1, 2011	Air emissions
CARB Large Spark Ignition Engine regulation limits emissions from gasoline forklifts.	January 1, 2009	CCR Title 13, Sections 2430, 2431, 2438, 2775	SNL/CA must reduce emissions from forklifts starting January 1, 2011	Air emissions
BAAQMD requires results of annual Leak Test on gasoline dispensing facility to be submitted to agency	January 2008	BAAQMD Regulation 8, Rule 7 and BAAQMD Permit condition	SNL/CA must submit results of Leak Test within 20 days of test date	Air emissions
BAAQMD regulation requires increase measures to control emissions from boilers rated between 2 MMBtu/hr and 10 MMBtu/hr/	January 1, 2009	BAAQMD Regulation 9, Rule 7	SNL/CA must perform annual inspections/tune-ups starting 2009; install insulation by January 1, 2010; and meet stack temperature and emission requirements starting January 1, 2011	Air emissions

## 10 Operational Control

Sandia maintains a Corporate Policy System that reflects the requirements of its contract with DOE and is consistent with the intent of Lockheed Martin Corporate Policy (Sandia's parent company). The Corporate Policy System governs all Sandia operations (SNL 2009f). It is part of Sandia's Integrated Laboratory Management System, and managed by the Corporate Policy & Lab Performance Evaluation Department. Operational controls for the site are further enhanced with division and project-specific technical work documents.

### 10.1 Corporate Controls

The Corporate Policy System contains nine policy areas and three levels within each area. The nine policy areas include corporate governance, ES&H, facilities, finance, human resources management, information management, integrated safeguards and security, mission execution, and supply chain management. The policy system levels are: Level 1 Corporate Policies; Level 2 Corporate Processes; and Level 3 Corporate Procedures. All policies, processes, and procedures require review at least every three years.

The Corporate Policy System was rolled-out in April 2009 and replaces the Corporate Business Rules System. The ES&H Policy Area is available through the corporate system but the structure of its policy, processes, and procedures will not change to the new format until September 2009.

Many of the Corporate Policy System requirements support the SNL/CA EMS Program. References to specific corporate policy system requirements are made throughout this manual when appropriate.

#### 10.1.1 ES&H Manual and Supplements (CPR400.1.1)

The primary corporate control document for environmental requirements is the ES&H Manual. It provides basic operational controls for the Sandia workforce (SNL 2009a) at all Sandia locations. It describes the basics of Sandia's ES&H Program. It identifies the boundaries of the program, describes how requirements flow down to Sandia organizations, and defines ES&H roles and responsibilities. The ES&H Manual is a compilation of process requirements and general procedures for complying with ES&H laws, regulations, DOE Orders, and Sandia requirements. The ES&H Manual is supplemented by site-specific process requirements when needed to address state and local requirements that are applicable at SNL/CA.

### 10.2 Local Controls

SNL/CA maintains a variety of operational controls that are site specific. These include technical work documents, an ES&H, Facilities, and Security Interdisciplinary Team, environmental permits and compliance documents, and contract specifications.

The process used at SNL/CA for work planning and control is depicted in Figure 16<sup>1</sup>. The process follows standard Sandia ISMS/EMS steps to plan work, analyze hazards, control hazards, perform work, and improve. Relevant significant environmental aspects for specific activities are determined during analyses of hazards.

### 10.2.1 Technical Work Documents

Technical work documents are required for all operations. The procedure for preparing and maintaining technical work documents is identified in Chapter 21 of the ES&H Manual. The initial step in identifying operational controls is accomplished through Sandia's PHS process. The PHS is an online tool used to identify potential hazards associated with new and continuing activities. Through execution of the PHS tool, technical work documents, training, and personal protective equipment are identified to control safety conditions and environmental releases. All active PHSs are reviewed and updated annually. At SNL/CA, the center ES&H coordinators assist the site workforce with preparation and update of PHSs. The PHS database is available online to all Sandia workers at <http://info.sandia.gov/esh/phs/>.

Technical work documents are used to define administrative and engineered controls required to address the hazards identified through the PHS. Technical work documents include operating procedures, standard operating procedures, safe work permits, and radiological work permits. These documents are updated every one to five years, or more frequently as needed. Technical work documents are maintained in an online database that can be found at <https://sierra-rf.ran.sandia.gov/eshdoc.nsf>.

### 10.2.2 Interdisciplinary Team Process

The Interdisciplinary Team (IDT) process is a review process for new and changing projects at SNL/CA. IDT reviews occur during project planning so that environmental requirements and controls can be identified early and incorporated into project schedules. The IDT process has been used for more than ten years and is recognized by internal and DOE stakeholders as a successful best management practice and operational control mechanism. Additional information about IDT is provided in Chapter 14.

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<sup>1</sup> The work planning and control process is being updated. Implementation of the updated process must be initiated by June 30, 2009. Updates are expected to enhance the existing process to create efficiencies and effectiveness in planning and controlling work. The methodology outlined in Figure 16 will not change substantially.

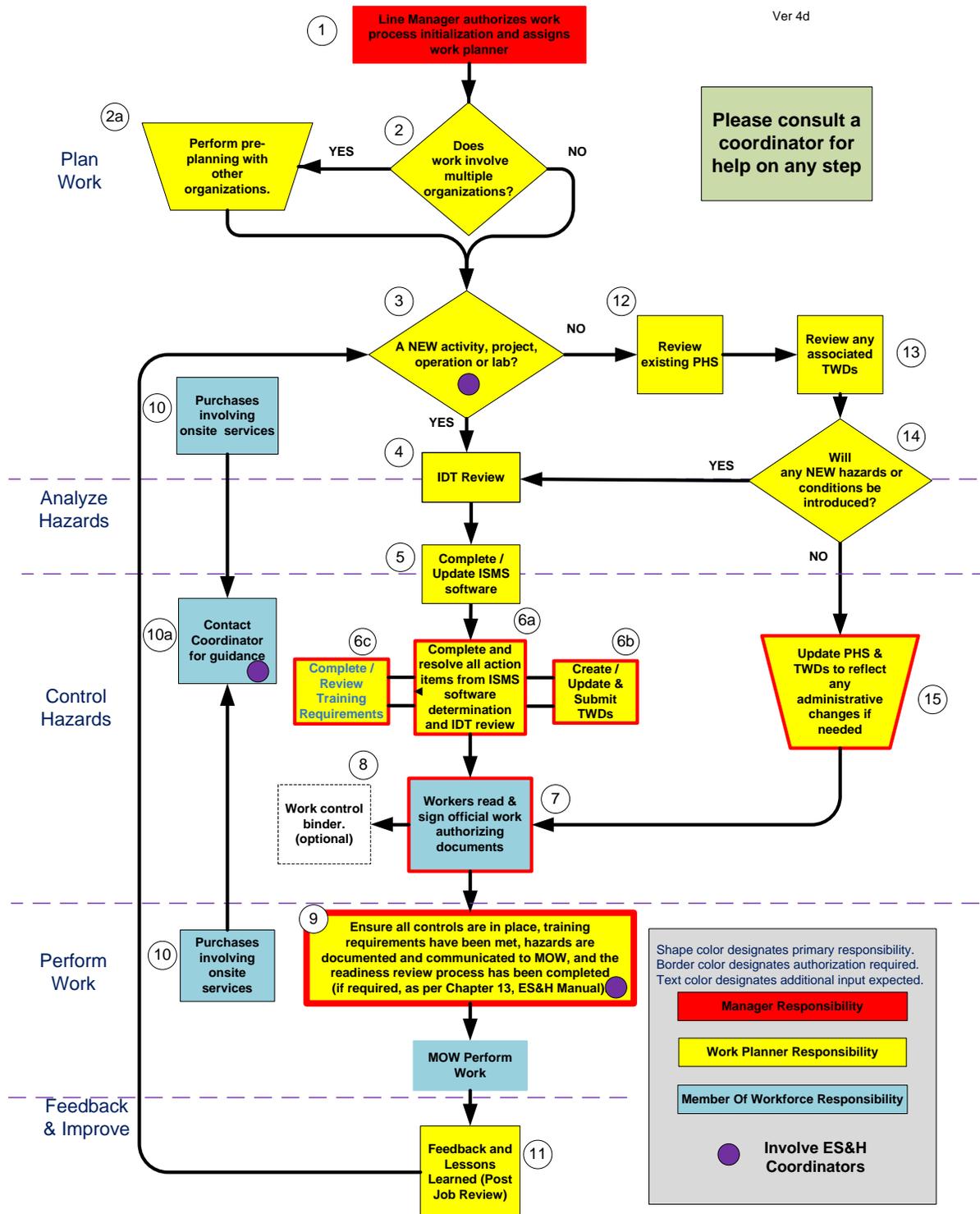


Figure 16 SNC/CA ES&H Review Process

## 10.2.3 Environmental Permits and Compliance Documents

Environmental permits and compliance documents function as activity-specific operational controls. They provide conditions under which the SNL/CA site may operate to meet federal, state, and local environmental regulatory requirements. Table 10 provides a list of the permits and documents valid in 2009. The individual environmental program annual reports provide additional information about each type of permit or compliance document (Appendix B).

**Table 9 Environmental Permits and Compliance Documents, 2009**

Type	Description	Statute / Regulation	Agency /Authority
Air	Permit to Operate emission sources (15 sources for 2008/2009)	Clean Air Act	BAAQMD
Environmental restoration	Site Clean-up Order No. 89-184	California Water Code	Regional Water Quality Control Board, San Francisco Bay
Hazardous materials	Business Plan Permit to Operate	California Health and Safety Code	Alameda County Environmental Health Department
Hazardous waste	RCRA Hazardous Waste Facility Permit	RCRA	California Department of Toxic Substances Control
Hazardous waste	Permit by Rule	RCRA	Alameda County Environmental Health Department
Hazardous waste	Conditionally Authorized Permit to Operate	California Health and Safety Code	Alameda County Environmental Health Department
Medical waste	Small Quantity Generator with Onsite Treatment	California Health and Safety Code	Alameda County Environmental Health Department
Medical waste	Small Quantity Generator without Onsite Treatment	California Health and Safety Code	Alameda County Environmental Health Department
Wastewater	Wastewater Discharge Permit	Clean Water Act	City of Livermore Water Reclamation Plant
Storm water	State of California General Industrial Permit	Clean Water Act	State of California Water Resources Control Board
Jurisdictional waters of the U.S.	Channel improvements under the Arroyo Seco Improvement Program	Clean Water Act	Army Corp of Engineers
Underground storage tank	Permit to Operate	Resource Conservation and Recovery Act and California Health and Safety Code	Alameda County Environmental Health Department
Aboveground storage tanks	Storage statement	Aboveground Petroleum Storage Act	State of California Water Resources Control Board
Environmental assessment	Final Site-wide Environmental Assessment of the SNL/CA	NEPA	DOE
Biological resources	Biological and Conference Opinion for SNL/CA	Endangered Species Act	U.S. Fish and Wildlife Service
Universal waste	Generator statement	California Electronic Waste Recycling Act, 22 CCR § 66273	California Department of Toxic Substances Control

## 10.2.4 Contract Specifications

SNL/CA's contract specifications function as operational controls for contractor-directed work activities. The specifications include requirements for contractors to apply environmental controls in all appropriate work activities to maintain regulatory compliance and support environmental stewardship efforts at SNL/CA. Contractors are also required to report to SNL/CA on their efforts in waste reduction, recycling, and reuse of materials.

SNL/CA implemented an environmental specification that will consolidate all environmental requirements applicable for construction activities into one document. An environmental permit is also pending implementation that will be included as part of the bid package to identify check points and contacts for various activities. The permit is expected to be implemented by June 2009.

Efforts are also underway to identify environmental concerns for small value service / repair contracts. In October 2008, SNL/CA developed an environmental checklist to collect information during the procurement process from service / repair contractors. Identification of environmental concerns will be part of a new SNL/CA Work Planning and Control Procedure expected to be implemented by June 30, 2009.

# 11 Document Control

## 11.1 Corporate Documents

The Information Management Policy Area (IM 100) identifies the process and procedures for managing and protecting Sandia information (SNL 2009c). The official version of all corporate policies, processes, and procedures is the electronic version maintained on the Sandia Restricted Network. These documents are disseminated to the workforce exclusively through the Corporate Policy System. They are reviewed and updated at least every three years. Each document is assigned an Executive Policy Sponsor. Only the sponsor or their delegate can approve changes to these documents.

## 11.2 Technical Work Documents

ES&H requirements and concerns related to activities and operations at SNL/CA are addressed through technical work documents such as operating procedures, hazard assessments, safety plans, and other similar documents. The procedure for updating and controlling technical work documents is identified in Chapter 21 of the ES&H Manual (SNL 2009a). Technical work documents are marked with an issue identifier for version control, date of publication, review period, and due date of next issue. The most current version of technical work documents is maintained in an online database. Outdated versions are removed from the online system when new versions are issued to prevent unintended use of obsolete documents.

Safety procedures and plans contain authorized users lists. Personnel must read updated versions of technical work documents when issued and sign the authorized users list indicating their understanding and agreement to operate in accordance with new and modified procedures. Reference copies of technical work documents may be kept at the point of use at the discretion of the appropriate line manager. Line managers are responsible for establishing a process to keep printed reference documents up to date and for ensuring that personnel have reviewed appropriate procedures and signed the authorized users list before conducting operations.

To control obsolete documents at point of use, Sandia identifies five methods of document control in the ES&H Manual, Chapter 21 (SNL 2009a). Methods range in formality from use of a formal document control center or numbered controlled copies to posting electronic copies on an internal Sandia network.

SNL/CA increased efforts to control obsolete documents at point of use in 2006 in response to an ISO audit finding. Line manager responsibilities for document control were specifically identified in the *Division 8000 Work Planning and Control Procedure* (AP800015). In November 2008, validation of the corrective action was conducted and found that 38 percent of documents maintained in point of use binders were obsolete. SHEAC reiterated that it is the line manager's responsibility to review document binders during routine surveillances for obsolete documents. A follow-up validation is planned for October / November 2009.

In August 2008, SNL/CA implemented a new process to stamp obsolete documents maintained in the ES&H Records Center as superseded. As updated documents are filed in the Records Center, outdated versions are stamped.

## 11.3 Environmental Program Documents

EMS program and other environmental program documents are controlled by the Environmental Management Department (Organization 8516). These documents are reviewed annually as part of the program assessment process outlined in *Quality Assurance of Data, Documents and Select Activities of the Environmental, Safety, and Health Departments, 8516 and 8517* (Appendix C). Each program lead controls and approves changes to their documents. The department manager controls and approves changes to EMS-specific documents. Current versions are maintained in active records storage in the ES&H Records Center, and displayed on the SNL/CA ES&H web site. Paper copies are not distributed to the workforce.

Environmental documents of external origin (e.g. permits, regulatory authorizations, etc.) are maintained by the Environmental Management Department. Many of these documents are marked as valid for a specified period of time. Environmental program leads coordinate updates to external documents to ensure that documentation remains current. Permits and other regulatory authorizations that require posting at point of use are controlled and distributed by environmental program leads to ensure that obsolete documents are not used unintentionally.

## 12 Competence, Training, and Awareness

Operations at SNL/CA fall within two categories, Sandia-directed and contractor-directed. The mechanisms used to ensure that the workforce is competent, trained, and aware differ depending on the category of operation. To foster general site awareness of EMS and ES&H issues, SNL/CA routinely disseminates information through brochures, fact sheets, newsletter articles, the ES&H website, electronic announcements, project reviews, and line assessments. Chapter 20 provides additional information on EMS communications.

### 12.1 Sandia-directed Operations

Members of the workforce involved in Sandia-directed operations are subject to the requirements of Sandia's ES&H Manual. These requirements apply to Sandia employees (full and part-time staff, student interns, post-doctoral appointees), contractors performing under Sandia-directed contracts, and visitors (conference and meeting attendees, visiting researchers, industry partners). Chapter 11 of the ES&H Manual summarizes training for Sandia-directed operations. All Sandia workers and visitors are accountable and responsible for meeting applicable ES&H requirements, including those related to training.

SNL/CA provides general EMS awareness training to the site work force through the following mechanisms.

- New-hire orientation is a one time basic orientation to ES&H for employees and contractors performing under Sandia-directed contracts.
- ESH100 is an annual training requirement for the entire site workforce.
- ENV112CA is an annual training requirement for generators of hazardous waste at SNL/CA.
- Presentations tailored to site organizations.

#### 12.1.1 Employee Competence, Training, and Awareness

It is Sandia's practice to select the best qualified individuals on the basis of demonstrated competence (*HR 100.1 Acquire Talent*) (SNL 2009d) and to provide opportunities for, and encourage, professional development (*HR100.2 Develop the Workforce*) (SNL 2009e). To support this policy, Sandia maintains a set of general corporate training courses that cover a wide range of areas such as information and physical security, business ethics and diversity, ES&H, and general business processes. General corporate training requirements are identified at the time of hire by Sandia managers and training coordinators. Job-specific training and competencies are identified through the PHS process, by ES&H coordinators, and by project and department managers. Training requirements are listed on a Work Authorization Form maintained for each member of the workforce. Employees review and sign the Work Authorization Form indicating their understanding of training requirements.

Sandia maintains an online Corporate Education, Development, and Training System (CEDT System) at <https://hrprod.sandia.gov/cfdocs/prod/hris/ctd/apps/cedtweb/cedtmain/index.cfm> to track completion status for all corporate training requirements and to provide electronic reminders to an employee and their manager when a course is due. ES&H Coordinators also communicate past due training statistics with Center Directors on a routine basis.

#### **12.1.1.1 Environmental Program Workforce**

Each of the six SNL/CA functional environmental program areas (Chapter 8) supporting the site's EMS Program maintain job descriptions, qualifications, and training requirements for each environmental program job position. Program leads review job descriptions, qualifications, and training requirements annually, update them as needed, and document the results of the review in annual program reports (Appendix B). The annual review and update provides an opportunity to modify training and competencies for existing environmental positions, or to identify new environmental positions, that are needed to support new or changing requirements.

EMS Program awareness and training for members of the Environmental Management Department is accomplished through monthly department meetings. Updates on current EMS Program efforts and improvements made to the program are provided to the environmental program workforce during these meetings. Additionally, EMS information specific to functional environmental programs is relayed routinely to the appropriate personnel through established and informal meetings promoted by functional program leads.

#### **12.1.2 Contractor Training, Awareness, and Competence**

Contractors involved in Sandia-directed operations must meet basic competencies required to perform the assigned functions. Contracting companies also provide any general certifications needed for the assignment. Sandia communicates competency requirements and required qualifications with a job statement. Contracting companies provide resumes of potentially qualified workers to Sandia for review. Sandia managers or program leads review contractor resumes and screen against the job statement, conduct interviews, and select the preferred candidate. Sandia augments contractor training for Sandia-specific requirements identified through the PHS system or by the manager directing the contractors work. Sandia-required courses are tracked in the CEDT System. Similar to Sandia employees, contracted workers and the appropriate manager are notified when courses become due.

#### **12.1.3 Visitor Competence, Training, and Awareness**

The level of training required for visitors is dependent on the length of stay and activity that they will perform. ES&H training for visitors at SNL/CA is addressed in Chapter 11 of the ES&H Manual. Sandia hosts and their managers determine the level of training required for visitors. At a minimum, visitors performing hands-on work in SNL/CA facilities receive ES&H awareness training. Laboratory- and equipment-specific training is also provided for visiting researchers performing hands-on work at SNL/CA user facilities. For general EMS awareness, SNL/CA requires all visitors to review an ES&H briefing card when they receive a badge and prior to entering the site.

## 12.2 Contractor-directed Operations

Contractors performing under contractor-directed contracts are subject to standard specifications established by SNL/CA and included in the contract. Sandia identifies specialized training, credentials, or certifications required for contractors in the contract specifications. For contractor-directed operations, contractor companies must submit an Injury Illness Prevention Program and a Job Hazard Analysis for review by SNL/CA's Construction Safety Engineer. Work does not begin until these documents are approved by Sandia. A Preliminary Hazard Assessment prepared by Sandia is also included in contract documents. The hazard assessment identifies specific environmental issues, such as air quality, waste management, and storm water pollution prevention that are applicable to a specific project.

SNL/CA requires contractors to provide a project safety officer when conducting work at Sandia, and to provide written documentation that the safety officer meets the qualifications defined in the contract specifications. Additionally, specifications require contractors to maintain appropriate contractor training records on site and make available to Sandia oversight personnel upon request.

All construction projects or construction-like activities at SNL/CA are presented to the ES&H IDT for review. The IDT process functions both as an awareness and compliance mechanism. SNL/CA executes the IDT process to identify ES&H requirements and to disseminate EMS information to the respective SNL Project Manager. Requirements and other applicable information identified during the IDT review are provided to contractors through contract specifications and during the safety plan review process. A pre-construction conference is held to determine if the pre-work contract requirements have been met (e.g. approved safety plan, activity hazard assessment, construction site requirements, etc.). Environmental staff routinely attend pre-construction conferences to provide awareness training on topics of concern such as storm water pollution prevention, wildlife, and recycling/reuse of materials.

Sandia provides oversight throughout the length of projects. Oversight personnel identify non-conformances through deficiency notices, non-compliance notices, and safety violation notices. All non-conformance notices are tracked by Sandia and used during evaluations for contract renewals.

## 13 Environmental Monitoring and Measurement

Each SNL/CA functional environmental program routinely monitors and measures the key characteristics of site operations that can affect the environment. Monitoring and measurement information supports our compliance requirements as well as assessment of overall progress in meeting site environmental objectives. For instance, the Environmental Monitoring and Restoration Program routinely samples and analyzes wastewater and storm water for contaminants of concern and other parameters. Data collected provide a measure of the quality of water discharges that can be used to determine if site operations meet permit conditions (compliance), or show improvement in sewer water quality (wastewater discharge objective). Program leads report the monitoring results as site metrics and publish these on the SNL/CA ES&H webpage. Table 11 identifies the monitoring activities conducted at SNL/CA and the EMS objective that the activities support.

**Table 10 EMS Monitoring Activities**

<b>Key Characteristics of Site Operations</b>	<b>Monitoring Activity</b>	<b>Supports EMS Objective</b>
Laboratory wastewater discharges	Routine sampling/analyses of sewer water; weekly monitoring of continuous flow meter at sewer outfall	Minimize the volume and contamination of sewer water
Industrial and construction activities	Routine sampling/analyses of storm water (2 storm events per year)	Minimize the volume and pollution of storm water runoff
Emissions generated from site operations and onsite transportation	Estimate mobile source emissions and compare against baseline estimate; collect and compile data on fill-ups on Spare-the-Air days	Minimize air emissions related to operations and transportation with particular emphasis on Spare-the-Air days
Material procurement and use	Monitor annual affirmative procurement purchases, EPEAT designated computer purchases, and purchases of paper products	Procure and use environmentally friendly products and materials
Use of land where sensitive wildlife and habitat are present	Annually monitor wildlife species richness; annually monitor habitat improvements from Arroyo Seco project and compare against success criteria	Enhance the natural habitat
Commuter site	Periodic survey of site population on use of commute alternatives	Maximize the use of commute alternatives by members of the workforce.
Use of fuel in onsite vehicles / equipment	Annually monitor use of liquid transportation fuels	Minimize the environmental impacts of transportation.
Hazardous and biological material use	Annually conduct chemical inventory reconciliation	Minimize the use of hazardous material; minimize the use of biological material
Hazardous waste generation	Continuous monitoring of quantities and types of hazardous waste generated	Minimize the generation of hazardous waste
Radioactive and mixed waste generation	Continuous monitoring of quantities and types of radioactive and mixed waste generated	Minimize the generation of radioactive and mixed waste
Solid waste generation	Continuous monitoring of quantities of solid waste generated and quantities and types of materials recycled	Minimize the quantity of landfill waste through reduced consumption and/or reuse/recycling
Use of energy and water resources	Quarterly monitoring of resources used	Minimize site water consumption; minimize site natural gas consumption; minimize site electrical consumption
Previously contaminated areas	Quarterly monitoring of groundwater at previously contaminated areas	Minimize the environmental impacts of site contaminated areas

## 13.1 EMS Metrics

SNL/CA uses various metrics to measure environmental affects or impacts from site operations. Additionally, SNL/CA established metrics to measure general environmental management and awareness. Table 12 provides a list of site EMS metrics. Graphical representation of each metric is displayed on the SNL/CA ES&H website at <http://surf.ran.sandia.gov/centers/8500/esh/CA-EnvMgmt/metrics>.

**Table 11 List of EMS Metrics**

<b>Impact Metrics</b>	<b>EMS Management Metrics</b>
Mobile source emissions	Published communications
Fueling operations on Spare-the-Air days	Outreach activities
Wildlife species diversity	Environmental awareness
Energy use	Environmental violations, findings, DOE occurrences
Sewer flow	IDT reviews of site projects and activities
Sewer water contamination	NEPA reviews
Storm water system controls	
Water use	
Site chemical inventory	
Chemical inventory reconciliation	
Gas cylinder inventory	
Hazardous waste	
Hazardous waste chemical spills	
Environmentally preferred procurement	
Landfill waste	
Recycling	
Arroyo Seco Improvement Program plant survival	

## **14 Evaluating Compliance with Environmental Requirements**

SNL/CA evaluates compliance with all environmental requirements through the IDT process, self-assessments, and audits.

### **14.1 IDT Process**

The IDT process is used to review SNL/CA projects early in the planning stages and to provide guidance to project proponents on ES&H, security, facilities issues (engineering, maintenance, and operations) and general operational/logistical issues. The IDT meets weekly to review new activities and significant changes to existing activities. This process also serves as an avenue for project proponents to provide feedback that can be used for both project and ES&H process improvement. Each functional environment, safety, security, and facility operations program has a representative on the IDT. The environmental program representatives provide project proponents with information and guidance on environmental objectives, compliance, requirements, and other EMS-related topics.

In 2007, SNL/CA began using an electronic data management system to record IDT reviews and compile the results of the review into an electronic report. The electronic report is accessible to the presenter, IDT members, and other designated participants in the process. A paper copy of the report is printed and maintained in the ES&H Records Center. The IDT record includes an IDT evaluation request, a list of IDT members in attendance, comments and requirements provided by IDT members; and presentation materials. A digital recording of each presentation that serves as meeting minutes is also maintained as a record in the Web File Share database, a corporate database for electronic files.

### **14.2 Self-assessments and Audits**

Compliance evaluations are supported by a wide variety of assessments and audits. Implementation of requirements across all SNL/CA operations, as well as management processes, are evaluated through self-assessments and audits. Self-assessment and audit results are maintained as Sandia records either in the ES&H Records Center or in an online database. Table 13 identifies the types of self-assessments and audits routinely conducted for SNL/CA operations, and the records that result from each.

In 2006, SNL/CA's EMS Program received certification under the international standard for environmental management systems, ISO 14001:2004. The ISO 14001:2004 standard requires annual or semi-annual surveillance audits of certified EMS programs. In 2008, SNL/CA's surveillance audits were conducted in April and September, resulting in continued certification under the ISO standard.

**Table 12 SNL/CA Environmental Assessment and Audit Types**

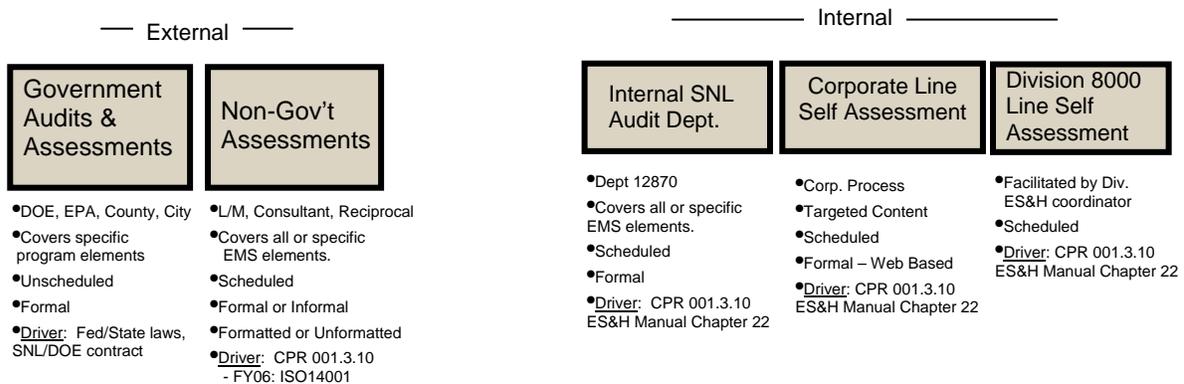
Type	Guidance Document / Driver	Conducted By	Schedule	Scope	Record Type	Record Maintenance
<b>Line Implementation</b>						
Corporate Line Self-assessment	ES&H Manual Section 22A	All members of the workforce	Monthly	Select ES&H areas	Corporate self-assessment database	Online
Division 8000 Line Self-assessment	ES&H Manual Section 22A	Line manager	Annual	Select ES&H areas	Division 8000 ES&H self-assessment database	Online
Environmental program line assessment	Administrative procedure – AP800005	Functional program lead	Annual	Adequacy and effectiveness of processes, adequacy of resources, communication of requirements, line ownership of requirements	Assessment report	SNL/CA ES&H Records Center
EP Representative assessment	Administrative procedure – AP800009	EP Representative	Routine / ongoing	Informal, focus on critical environmental requirements and trouble spots	Informal report	SNL/CA ES&H Records Center
<b>Audits</b>						
External regulating agency audits and inspections	Federal, state, and local regulations and permits	Regulatory Inspectors	Annual	All aspects of facility operations, record keeping, program processes, and adherence to permit conditions / requirements, audits are generally unplanned and unannounced	Official correspondence	SNL/CA ES&H Records Center
DOE audits	M&O Contract, DOE policies and requirements	DOE auditors	Annual	Subset of ES&H programs audited each year	Audit report	SNL/CA ES&H Records Center
Management System audits	M&O Contract, Corporate Policy Statement CPS001.3, Corporate Policy Requirement CPR001.3.5	Sandia ES&H, Quality, and Safeguards & Security Assessments Department	Annual	Internal, independent audit of laboratory systems associated with ES&H, Quality, and Safeguards & Security	Audit report	SNL/CA ES&H Records Center
Third party certification	ISO 14001	External third party auditor	Recertify every three years; surveillance semi-annually	Requirements of the ISO 14001 Standard	Audit report	SNL/CA ES&H Records Center

# 15 EMS Internal Audit and Self-Assessment

Annually, SNL/CA completes an internal audit of the EMS Program to determine if it conforms to the ISO 14001 Environmental Management System standard, and to ensure that it is properly implemented and maintained. Additionally, the various assessments and audits described in Chapter 14 support management and maintenance of the EMS. SNL/CA maintains an administrative procedure for conducting assessments used in support of the EMS Program (SNL/CA 2008c). Figure 17 summarizes the assessment sources that assist in keeping SNL/CA's EMS on track.

## SNL/CA EMS Assessments

### Independent Assessments



### Self Assessments

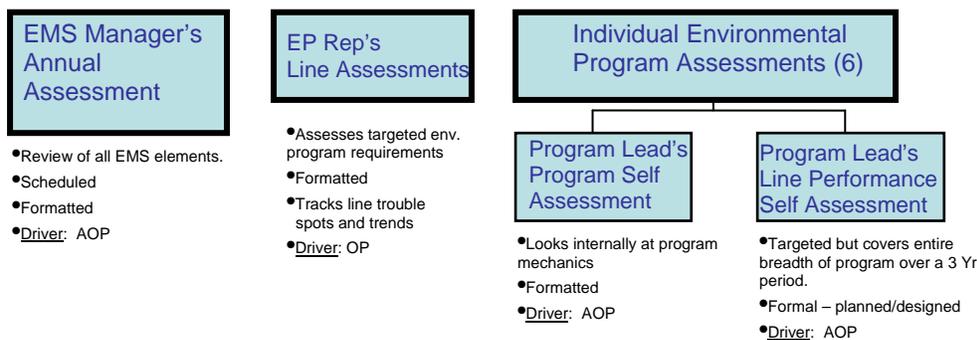


Figure 17 Assessments Supporting SNL/CA's EMS Program

## 15.1 Internal EMS Audits

Sandia's corporate assessment team in the ES&H, Quality, and Safeguards & Security Assessments Department (Organization 12870) conducts periodic internal audits of SNL/CA's EMS Program. Internal audits will be completed every three years and will evaluate the EMS Program against the requirements of the ISO 14001 standard. The first internal audit against ISO 14001:2004 requirements was conducted in June 2008. During interim years, the EMS Core Team completes a gap analysis of select ISO elements. The gap analysis provides a broad look at requirements rather than an in-depth comparison against the details of the ISO standard. Internal audit reports and gap analyses are EMS records and maintained in the ES&H Records Center.

### 15.1.1 2008 Audit

In June 2008, Organization 12870 conducted an audit of the SNL/CA EMS Program against the requirements of the ISO standard. The audit resulted in two issues<sup>2</sup> requiring corrective action. The first issue relates to discrepancies between information presented in the EMS Manual and similar information maintained on the EMS website. Corrective actions were implemented to update all information presented on the website and to state in Section 1.2 of this manual that information presented on the web is the most up-to-date and that the manual reflects a point-in-time. The second issue relates to consideration of small-dollar subcontracts in identifying environmental aspects and undefined operational controls for such activities. Corrective actions were implemented to insert an environmental questionnaire into the contracting process to capture environmental data and identify action-specific controls, when applicable.

### 15.1.2 2009 Audit

The 2009 internal audit of the SNL/CA EMS Program consists of an interim gap analysis against the ISO 14001:2004 standard. The gap analysis was completed in April 2009. No gaps were identified, but several areas of improvement were noted in the areas of communications and awareness and document control.

## 15.2 EMS Program Self-Assessments

The primary self-assessment used for the EMS Program is the annual EMS Management Representative assessment. Other self-assessments may also be used to evaluate the EMS Program, including corporate and DOE assessments. EMS Program self-assessment results are EMS records and maintained in the ES&H Records Center.

### 15.2.1 2008 Assessment

The EMS Management Representative completed an EMS Program self-assessment in December 2008 with a focus on identifying improvements. The results of the assessment are documented in the Laboratory Enterprise Self Assessment (LESA) database. A self-assessment report is

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<sup>2</sup> An issue represents a noncompliance with requirements and/or presence of a potentially unacceptable risk.

generated from LESA and submitted to the ES&H Records Center. The results of the 2008 assessment are summarized below.

- Include the Arroyo Improvement Plan on the Environmental Planning and Ecology Program website.
- Include a date on the “current wildlife issues” website.
- Environmental Planning and Ecology Program should assume a greater role in site development planning to capture and communicate environmental requirements.
- Consider a separate specification for environmental requirements.
- Implement a procedure to routinely remove sediment from LEC pits.
- In the Waste Management Program, review past year assessment results for trends and develop actions to correct negative trends.
- Complete procedures for universal waste items.
- Implement cardboard recycling process.
- Submit Federal Electronics Challenge submission for a site award.
- Develop an energy conservation section on the EMS website that includes corporate targets, conservation tips, and external links.
- Update preferred list of recycled paper products for ease in readability.
- Establish clear baselines for pollution prevention and waste minimization targets.
- Complete the diesel transition plan and communicate to SHEAC.
- Work with corporate Fleet Management Program to adequately reflect SNL/CA in the corporate plan.
- Develop a site vehicle plan.
- Update Fact and Help sheets with current information, place updated sheets on website.
- Work with Badge Office to implement a visitor briefing card.
- Update website with current significant aspects.
- Verify that assessment documents from the CUPA inspection are copied into the 2008 assessment files.
- Complete the installation of sewer flow meters including one at the pump discharge station.
- Devote one core team meeting to review of assessment and corrective action process.
- Review self-assessment reports and assure actionable items are entered into LESA and/or Actions Spreadsheet.
- Convert Quality Assurance Program Plan to a companion to the EMS Manual.
- Develop a list of outreach presentations to line organizations.
- Create metrics for new 2009 targets.
- Input above action items on the Actions Spreadsheet.

### **15.2.2 2009 Assessments**

During the fourth quarter of 2009, the EMS Management Representative will complete a self-assessment of the EMS Program. This self-assessment will evaluate each element of the program for improvements in implementation and management. Other than the scheduled gap analysis (see Section 15.1.2), there are no other corporate, division, or DOE assessments planned for the EMS Program in 2009.

## 16 Nonconformity, Corrective, and Preventive Action

SNL/CA maintains a procedure for identifying nonconformities through a system of audits and assessments. *Administrative Procedure AP800005, Environmental Management System Assessment Process* (SNL/CA 2008c) describes the various audit/assessment types that are conducted to assess site compliance with environmental regulations and requirements, and continually improve the site EMS. The procedure also describes scheduling, tracking, and management of results. Audits and assessments conducted at SNL/CA are described in Chapters 14 and 15 of this manual.

### 16.1 Audit and Assessment Tracking

SNL/CA environmental and EMS-related audits and assessments are tracked and documented in one of three databases: the LESA database, the Corrective Action Tracking System (CATS), or the EMS Actions Spreadsheet. LESA and CATS are online corporate systems. The EMS Actions Spreadsheet is an Environmental Management Department tool used to capture actions that do not warrant entering into LESA or CATS.

### 16.2 Corrective and Preventive Action

The EMS Core Team and SNL/CA Assurance Department evaluate the results of environmental and EMS-related audits/assessments to identify findings, observations, opportunities for improvement, and noteworthy practices<sup>3</sup>. Corrective actions are established for all findings. SNL/CA uses the corporate Corrective Action Tracking System (CATS) to record and track implementation of environmental and EMS-related corrective actions associated with audit issues / findings from Organization 12870, DOE, or external agencies. Corrective actions from self-assessments (including ISO surveillance audits) are recorded and tracked in LESA or the EMS Actions Spreadsheet. Verification of corrective actions entered into CATS is conducted by an independent verifier, generally a member of SNL/CA's Quality Assurance organization. Verification of corrective actions entered into LESA and the EMS Actions Spreadsheet are verified by the EMS Core Team. A root cause determination is required for all findings entered into CATS.

Preventive actions are established for observations and opportunities for improvement. Preventive actions are recorded in LESA and tracked using an EMS action spreadsheet. Core Team members notify the responsible member of the workforce of the need for preventive actions using the site email system. Verification of preventive actions is conducted by the Core Team.

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<sup>3</sup> Definitions of terminology are provided in AP800005.

## 16.3 Validating Effectiveness of Actions

SNL/CA's process for validating the effectiveness of corrective and preventive actions for environmental and EMS-related issues is documented in *Administrative Procedure AP800010, Validation of Environmental or EMS-Related Corrective / Preventive Actions* (SNL/CA 2008b). The EMS Core Team and SNL/CA Assurance Department determine which actions require validation. Actions are selected for validation based on the significance or risk of nonconformity. For example, actions that address serious nonconformities with potential for a fine, significant negative environmental impact, or actions attempting to correct recurring issues, may be selected for effectiveness validation. The validation of an action is documented on an SNL/CA EMS Corrective / Preventive Action Validation Form. Completed forms serve as the ES&H record of validation.

## 17 Management Review

Annually, the EMS Management Representative reviews SNL/CA's EMS Program with SHEAC (Section 3.1). Management reviews are intended to ensure continued suitability, adequacy, and effectiveness of the EMS Program. Reviews include the following topics.

- Results of internal audits and evaluations of compliance with legal and other requirements
- Communications from external parties
- Site environmental performance
- Progress in meeting EMS objectives and targets
- Status of corrective and preventive actions
- Follow-up actions from previous management reviews
- Changing circumstances including developments in legal and other requirements related to environmental aspects
- Recommendations for improvements
- Modifications and additions to environmental objectives and targets

In the past year, management reviews were completed in April and October 2008.

During the April management review (conducted April 24, 2008), the EMS presentation included a follow-up on issues from the previous review, results of audits and assessments, compliance and changes to requirements, communications with external parties, the status of corrective and preventive actions, and recommendations for improvements. Actions resulting from this management review are:

- Provide information to center directors and the management team about the hierarchy of environmental risks that can then be communicated to the workforce.
- Evaluate and understand Office of Science expectations related to environmental programs to clearly position SNL/CA for a multi-landlord site.

During the October management review (conducted October 30, 2008), the EMS presentation included a follow-up from the prior review, recent major events, environmental performance for past year, extent to which objectives and targets were met, and new and modified objectives and targets. Actions resulting from this management review are:

- Review status of copper exceedance with site VP.
- Communicate to the workforce about landscape changes underway to conserve water and other resources.

## 18 EMS Documentation

Documentation to support SNL/CA'S EMS Program is comprised of both EMS-specific and general corporate and site documents and information sources. The SNL/CA EMS Program Manual is the primary EMS document for the site. It describes all elements of the EMS Program, how these elements connect, and it provides reference to other general documents that support the program. The EMS Program Manual documents the process used to identify significant environmental aspects applicable to site operations, and to establish objectives and targets that are measurable and relevant. It serves as a roadmap for continual EMS implementation, assessment, and improvement. The SNL/CA EMS Program Manual is reviewed and updated annually. Other documentation established for the SNL/CA EMS Program includes a communication plan (Appendix D), ES&H policy/standard of performance (Chapter 2), annual environmental program reports (Appendix B), annual EMS communications calendar (Figure 19), and project management schedules for significant environmental aspects (Chapter 6). EMS documents also include procedures developed specifically for the EMS Program, EMS decision documents, EMS internal audit and self-assessment results, communications with external parties, and results of management reviews. All documents created under the EMS Program are records in accordance with the definition of a record used at Sandia.

Other SNL/CA site-specific and corporate policies, document systems, and databases also support the EMS Program. Figure 18 identifies the documents and document systems that support the SNL/CA EMS Program.

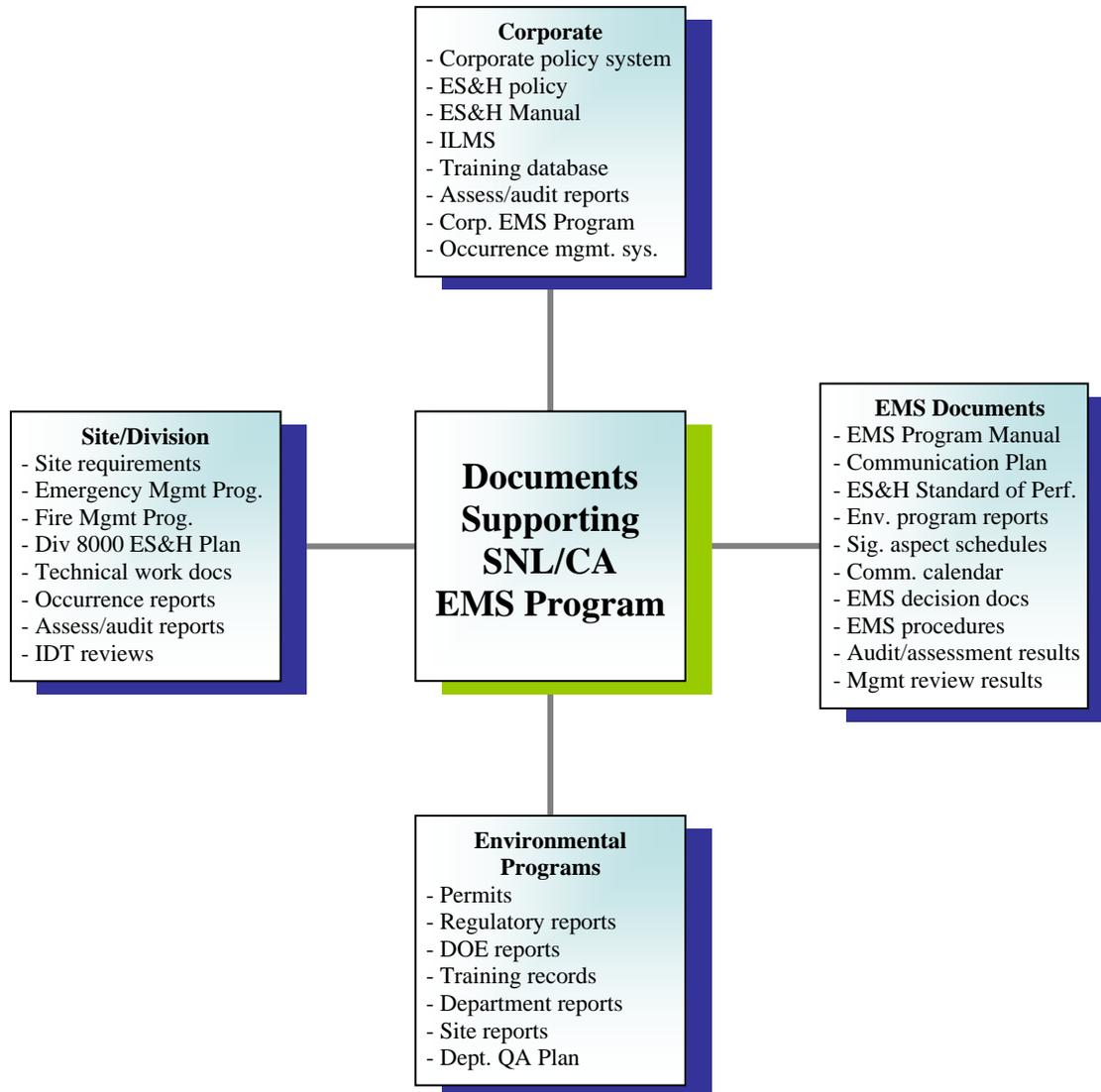


Figure 18 EMS Documentation

## 19 Records

Sandia manages all information created by Sandia work in accordance with the Corporate Policy System requirements identified in *IM 100, Information Management* (SNL 2009c). As defined in the information management procedures, information encompasses data, records, published material, and knowledge in written, pictorial, electronic, audio, oral, or other form. To assist the workforce with the requirements for managing information, Sandia developed a Records Management Manual. The Records Management Manual provides guidance on identifying records and non-records, provides a list of federal and DOE requirements governing records management, and summarizes the records retention and disposition schedule. The complete manual is available on the Sandia intranet at <http://www-irn.sandia.gov/recordsmgmt/rmm/Requirements.htm>.

SNL/CA maintains an additional procedure for managing ES&H records, *OP471347 Administrative Procedures for Managing Sandia/CA ES&H Recorded Information* (SNL/CA 2008a). This procedure incorporates corporate policies, requirements of the Records Management Manual, best business practices, program-specific regulatory requirements, and the requirements of the ISO 14001 standard. Under this procedure, ES&H programs are responsible for transmitting recorded information to the SNL/CA ES&H Record Center for storage and protection. The Record Center establishes file guides for categories of records and assigns a file code number. The file guide describes the record, identifies the retention period, describes the disposition instructions (where applicable), and provides filing instructions. Record Center personnel log all transmitted records into an electronic database. Document titles, dates, authors, and key words are included in the database to assist with tracking and retrieval of records.

SNL/CA established a file guide and code for EMS records in March 2005. The file code is AD-MAN-07.05. EMS program documents and supporting information are filed under this code with a permanent retention. SNL/CA maintains separate file guides and codes for other functional environmental program records that also support the EMS Program.

SNL/CA also uses a corporate database, Web File Share, to maintain digital recordings of IDT meetings and other electronic environmental program records. Environmental Program Leads have the option of submitting electronic records to the Web File Share system instead of creating paper copies. Electronic records support reductions in paper use and resources needed to manage and maintain paper records. The Web File Share system has been established and is managed as a permanent record.

## 20 Communications

SNL maintains an active communication system with established tools and processes to share information both internally and externally. As a result, SNL/CA has many options available to communicate EMS information to the site workforce and to external stakeholders. SNL/CA's Communication Plan Supplement (Appendix D) builds on the corporate EMS communication plan. The supplement identifies the communicators and their roles, outlines the site-specific communication tools used at SNL/CA, and provides a typical list of communication activities.

### 20.1 Internal Communications

The SNL/CA EMS Core Team communicates EMS information to the site workforce through the IDT process, publications, the internal web site, briefings, assessments, and promotional materials. The EMS Core Team receives input on environmental issues, including aspects and impacts, through the IDT process, the NEPA process, an ES&H telephone hotline, the self-assessment process, and the ES&H internal web site contacts list. SNL/CA also established an EMS Advisory Committee to facilitate communication between the EMS Core Team and the various organizations on site. The Advisory Committee consists of representatives from various functional areas including administrative support, facilities organizations, research and testing organizations, emergency planning, and procurement. Advisory Committee meetings are held semi-annually to seek input on current issues and concerns related to EMS implementation.

Figure 19 provides a list of actions scheduled and completed in 2009 to promote internal communications.

### 20.2 External Communications

SNL/CA's decision to communicate externally about the EMS program, including significant environmental aspects, is documented in a Memo-To-File (Figure 20). SNL/CA accomplishes external EMS communications through the annual site environmental report and Sandia's external web site at [http://public.ca.sandia.gov/casite/about/community/environmental\\_mgt.php](http://public.ca.sandia.gov/casite/about/community/environmental_mgt.php). Figure 20 provides a list of EMS topics included in the annual report. A comment response card is distributed with the annual report and a link is provided on the web site to gather input from external stakeholders. All published information distributed externally must be reviewed and approved for public release in accordance with Sandia requirements.

The EMS Core Team routinely communicates with external parties about elements of the SNL/CA EMS. External communications follow the *Administrative Procedure (AP800007), Receiving, Documenting, and Responding to EMS Communications from External Parties* (SNL/CA 2008e). Environmental staff members also conduct community outreach efforts by participating in site events, such as family days and site celebrations, and through presentations at local schools and community events. In 2008, Environmental Department staff participated in





**Sandia National Laboratories**

Operated for the U.S. Department of Energy by  
**Sandia Corporation**  
Livermore, California 94551-0969

*date:* July 18, 2006

*to:* Memo-to-File

*from:* Gary Shamber  
SNL/CA EMS Management Representative

A handwritten signature in blue ink, appearing to read 'G. Shamber', written over the 'from:' field.

*subject:* External Communications of the SNL/CA EMS

This Memo-to-File documents SNL/CA's decision to communicate externally on the various elements of its EMS Program. External communications shall be accomplished through an annual environmental report as required by *DOE Order 231.1A, Environment, Safety, and Health Reporting*. The annual report shall provide information of significant site EMS elements including:

- o The site's environmental policy
- o Significant environmental aspects and impacts
- o Legal and other requirements
- o Environmental objectives, targets and programs
- o Pollution Prevention and waste minimization
- o Resources, roles, responsibilities and authorities
- o EMS competence, training and awareness
- o Communication and community involvement
- o Environmental documentation
- o Control of documents
- o Operational control
- o Emergency preparedness and response
- o Monitoring and measurement
- o Evaluation of compliance
- o Nonconformity and corrective and preventive actions
- o Control of records
- o Internal audits
- o Management Review

SNL/CA's annual report shall include other content items as required by the annual content guidance issued annually by DOE.

The report shall be made available to the external community on Sandia's external website and by direct distribution to interested parties upon request.

*Exceptional Service in the National Interest*

**Figure 20 External Communication Decision Memo**

## Appendix A - EMS Targets for 2009

The following targets were approved by SHEAC on October 30, 2008. Targets are grouped under each aspect (green) and objective (blue). All Performance Track targets were removed in March 2009 (plum) because EPA canceled the program.

(Reviewed by EMS Core Team on 8/19/08)  
(Reviewed by EMS Advisory Committee on 9/17/08)  
(Approved by SHEAC on 10/30/08)

### General Environmental Operations.....

Objective: Provide exceptional environmental management for the SNL/CA site.

#### Targets:

- Receive zero findings per audit per environmental program as the result of annual DOE audits.
- Receive no more than 2 minor non conformances as a result of ISO14001 certification audits.
- Receive no Notices of Violation (NOVs) as a result of any external regulatory agency audit.
- Maintain a level of published environmentally-related communications at 6 per month (total of 72/FY).
- Maintain a level of environmentally-related outreach activities at 4 per month (total of 48/FY).
- By the end of FY2010 achieve a 20% increase in the EMS awareness survey average score from an FY2008 baseline.

### Water Discharges (Significant Aspect).....

Objective 1: Minimize the volume and contamination of sewer water.

#### Target:

- Maintain the average weekly composite Zinc and Copper concentrations in sewer below the 50% regulatory trigger level. (0.5 mg/L for Cu and 1.5 mg/L for Zn)
- Conduct sewer line cleaning and CCTV inspection for all sewer lines 6 inches and greater at least every three years. (Next due in fall 2011)

- Conduct annual physical survey/visual inspection of all sewer system components (exposed piping, manholes, pump stations, cooling tower basins, sink traps, LEC systems and sumps). (Next due in fall 2009)

Objective 2: Minimize the volume and pollution of storm water runoff.

**Targets:**

- 100% of new construction will have post-construction runoff equal to or less than pre-construction runoff.
- 100% inspection / cleaning of on site storm drain system including drop structures by October 1 of each year.
- By Sept 1 of each year implement runoff controls for 100% of bulk erodable landscape and construction material.

**Air Emissions (Significant Aspect)**.....

Objective: Minimize air emissions related to operations and transportation with particular emphasis on Spare-the-Air days.

**Targets:**

- Maintain on site fueling operations on Spare-the-Air-Days at (an average of) less than or equal to 3 fill ups/STAD.

**General Transportation (Significant Aspect)**.....

Objective: Maximize the use of commute alternatives by members of the workforce.

**Target:**

- In FY15 increase the use of single driver commute alternatives by 25% from the FY06 commuter survey established baseline. Alternatives include: carpooling, mass transportation, purchase/use of hybrids, biking/walking, telecommuting.

Objective: Minimize the environmental impacts of transportation.

- SLN/CA commits to reduce the use of transportation fuels (diesel, gasoline, and E85) by 10% by 2010 from a baseline year of 2006 (from 32,548 to 29,293 gallons).  
PERFORMANCE TRACK TARGET . Target removed because EPA canceled the Performance Track Program in March 2009.

**Land Use (Significant Aspect).....**

Objective 1: Enhance the natural habitat.

**Targets:**

- Complete the most critical actions identified in the Arroyo Seco Management Plan within 10 years of receipt of the 10 year permit (Permit received Sept 25, 2008).
- SNL/CA commits to complete four of the Arroyo Seco Improvement projects by 2010. PERFORMANCE TRACK TARGET Target removed because EPA canceled the Performance Track Program in March 2009.

Objective 2: Design and manage all buildings and facilities using “green” principles.

**Material Procurement and Use .....**

Objective: Procure and use environmentally friendly products and materials.

**Targets:**

- In FY10 purchases made by Affirmative Procurement Program will equal or exceed 96% of available procurements.
- In FY09 100% of purchased general use computers will meet or exceed EPEAT silver requirements.
- SNL/CA commits to increase the recycled content of paper products purchased by 10% by 2010 from a baseline year of 2006 (from 38,884 to 42,772 lbs). PERFORMANCE TRACK TARGET Target removed because EPA canceled the Performance Track Program in March 2009.
- In FY10 increase the use of bio based products by 25% from the FY08 amounts.

**Hazardous Material.....**

Objective: Minimize the use of hazardous material.

**Targets:**

- Maintain an annual overall Chemical Information System reconciliation of >94%.
- Maintain an annual Chemical Information System reconciliation of 100% for the NFPA 704 health hazard rated 4 materials greater than 10% of laboratory scale quantities (4 lbs solid, 0.5 gal liquid, 1 lb gas).

**Solid Waste**.....

Objective: Minimize the quantity of landfill waste through reduced consumption and/or reuse/recycling.

**Targets:**

- In FY10 decrease the amount of copy paper purchased by 5% from the FY05/06 average.
- Maintain 100% recycling of recyclable quality wood, concrete/asphalt and green landscape waste.

**Water Use**

Objective: Minimize site water consumption.

**Target:**

- In FY15 achieve a reduction in site water consumption by 16% from a FY07 baseline. (from 69,901 kgal to 58,717 kgal) (EO 13423)
- SNL/CA commits to reduce the quantity of water used on site by 6% by 2010 from a 2006 baseline (from 69,908,244 gallons to 65,713,749 gallons). PERFORMANCE TRACK TARGET. Target removed because EPA canceled the Performance Track Program in March 2009.
- No landscape watering between 7am and 7pm except for testing and maintenance.

**Objectives with no Current Established Targets**

**Hazardous Waste (Significant Aspect)**

Objective: Minimize the generation of hazardous waste.

**Universal Waste**.....

Objective: Maintain effective and efficient processes for the management of Universal Waste.

**Use of Biological Agents**

Objective: Minimize the use of biological materials.

**Radiological Material**

Objective: Minimize the use of radiological materials.

**Radiological & Mixed Waste**

Objective: Minimize the generation of radiological and mixed waste.

**Contaminated Areas**

Objective: Minimize the environmental impacts of site contaminated areas.

**Legacy Asbestos**

Objective: Reduce site legacy asbestos material.

**Hazardous Material Transportation**

Objective: Minimize the potential environmental effects of hazardous material due to transportation.

**Earthquake**

Objective: Minimize the environmental effects of a site seismic event.

**Fire**

Objective: Minimize the environmental effects of a site fire emergency.

**Natural Gas Use.....**

Objective: Minimize site natural gas consumption.

Defer to corporate program.

**Electrical Use.....**

Objective: Minimize site electrical consumption.

Defer to corporate program.

## Appendix B - Environmental Program Reports

Annual environmental program reports are available on the SNL/CA ES&H website. Listed are the links to each report. The official record of this manual stored in the ES&H Records Center contains a hard copy of each report.

### **Air Quality Program**

[http://surf.ran.sandia.gov/centers/8500/snl\\_ca\\_air\\_quaility\\_program\\_annual\\_report](http://surf.ran.sandia.gov/centers/8500/snl_ca_air_quaility_program_annual_report)

### **Environmental Monitoring Program**

[http://surf.ran.sandia.gov/centers/8500/snl\\_ca\\_environmental\\_monitoring\\_program\\_annual\\_report](http://surf.ran.sandia.gov/centers/8500/snl_ca_environmental_monitoring_program_annual_report)

### **Environmental Planning and Ecology Program**

<http://surf.ran.sandia.gov/centers/8500/esh/CA-EnvMgmt/programs/PE>

### **Hazardous Materials Management Program**

[http://surf.ran.sandia.gov/centers/8500/snl\\_ca\\_hazardous\\_material\\_management\\_program\\_annual\\_report](http://surf.ran.sandia.gov/centers/8500/snl_ca_hazardous_material_management_program_annual_report)

### **Pollution Prevention and Waste Minimization Program**

<http://surf.ran.sandia.gov/centers/8500/esh/CA-EnvMgmt/programs/PP/reports>

### **Waste Management Program**

[http://surf.ran.sandia.gov/centers/8500/snl\\_ca\\_waste\\_management\\_program\\_annual\\_report](http://surf.ran.sandia.gov/centers/8500/snl_ca_waste_management_program_annual_report)

## **Appendix C - ES&H Quality Assurance**

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**Quality Assurance of Data, Documents and  
Select Activities of the  
Environmental, Safety and Health  
Departments, 8516 and 8517**

**Sandia National Laboratories, California**

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Approved:

\_\_\_\_\_  
Gary Shamber, 8516      Date

\_\_\_\_\_  
Donn Wright, 8517      Date

\_\_\_\_\_  
Ed Cull, 8510      Date

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## 1.0 ORGANIZATION

Environmental Operations Department (8516) at Sandia National Laboratories, California manages the following site environmental programs:

- Air Quality
- Environmental Planning
- Environmental Monitoring and Restoration
- Waste Management
- Pollution Prevention / Waste Minimization
- Hazardous Materials Management
- Chemical Inventory System

Health and Safety Department (8517) manages the following worker health and safety programs:

- Industrial Hygiene
- Safety Engineering
- Radiation Protection
- Self Assessments
- ES&H Coordination
- Occurrence Reporting
- Injury/Illness Reporting

---

## 2.0 SCOPE

This document defines general procedures, actions and activities implemented to ensure that all ES&H data and documents produced by these departments are managed and maintained in a manner that ensures their accuracy, consistency, validity and retrievability. It applies, but is not limited to the following:

- all data collected, used or generated
- technical work documents
- technical reports and official correspondence
- SNL/CA ES&H web pages and associated/included links
- directory and reference information
- Internal and External Audit Corrective Action Plans

This document also addresses certain procedures, actions and activities implemented to ensure the high quality of two department processes including:

- training
- annual program assessments for program effectiveness

Quality Assurance – ES&H Data, Documents and Activities  
April 28, 2005

3 of 23

Each ES&H program will determine the need to produce a program-specific quality assurance plan. If required, these plans are expected to vary based on the requirements of the individual programs, but should contain, at a minimum, the 10 QA criteria listed in DOE Order 414.1B and 10 CFR 830.122.

This document tiers from the SNL/CA Quality Assurance Program Plan found at <https://wfsprod01.sandia.gov/groups/srn-uscitizens/documents/document/wfs070514.pdf>

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### 3.0 DATA – Collected, Used or Generated

Data collected, used or generated by the staff within ES&H must be representative, complete, comparable, accurate, and precise as follows:

- **Representative.** Determine data collection or sampling methods. Establish rationale for sampling scheme. Samples collected will be handled in accordance with *OP471310 Administrative Procedure for Control of Samples by the Environmental Operations Department*. All data must be accompanied with appropriate and consistent units of measure.
- **Complete.** Determine the acceptable quantity of data actually collected compared to the quantity of data planned to be collected.
- **Comparable.** When possible, sample collection strategies and methods will be based on published guidelines or standards, such as Occupational Safety and Health Standards, Federal Standards, or national consensus standards such as ASTM, ANSI, or other industry standard.
- **Accurate.** Determine appropriate methods to assure the accuracy of the data.
- **Precise.** Determine appropriate methods to assure the precision of the data.

All chemical analytical data must meet the requirements of *OP471613 Verification of Laboratory Chemical Analysis Data*.

#### 3.1 Data Management

Hardcopies of data will be maintained in accordance with *OP471347 Administrative Procedures for Managing Sandia/CA ES&H Recorded Information*.

Where feasible and desirable data may be maintained electronically. This may take many forms, and is left to the discretion of the Program Leads. At a minimum, the data maintained electronically will be verified to be complete and accurate on an annual basis. Electronic data will either be stored on a corporate server (to ensure daily back-ups), or backed-up monthly using removable media (i.e. CDs or DVDs).

#### 3.2 Data Analysis

Any required statistical analyses of data will be carried out in accordance with either: 1) guidance on statistical analyses provided by a regulatory agency, or

- 2) guidance pertinent to the type of data, quantity of data, and end use of the analysis. This guidance may be found in textbooks, statistics software or obtained from specialized training.

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## 4.0 TECHNICAL WORK DOCUMENTS

Technical Work Documents (TWD) are formally approved work documents used to identify activity-specific hazards and their associated work control measures. TWDs may include the following:

- standard operating procedures (SOPs)
- health and safety plans (HASPs)
- operating procedures (OPs)
- permits, such as safe work permits (SWPs) and radiological work permits (RWPs)
- data packages for pressure and vacuum systems
- safety and health programs for hazardous waste operations (HAZWOPER)
- plans, such as emergency response plans and facility- or building-specific evacuation/emergency plans.

TWDs will be produced in accordance with *ES&H Manual Chapter 21 Technical Work Documents (TWDs)*.

TWDs must be reviewed and approved before the work activities are performed. If a TWD expires before a planned revision or scheduled update is completed, the responsible Department Manager will issue a memorandum to file extending the previous revision expiration date. The extension shall be for a period of no longer than 60 days.

Substantive changes require an Interim Change Notice to be submitted and approved as described in *EP401502 Procedure for Control of Environment, Safety, and Health (ES&H) Documents*.

For minor changes to TWDs, it is acceptable to line through text and write in new text on the working copy, sign and date the changes. These changes should also be reflected on electronic versions of the TWD. The original shall be updated during the next revision cycle to reflect all minor changes recorded on the working copy.

Each ES&H program lead will conduct an annual review of TWDs supporting their respective program as part of the program annual self assessment. The review will be documented using the *Programmatic Document Review Form*. (Attachment A). The review shall consider the TWDs as a “system” of documents and assure that each is appropriately cross referenced and use consistent content. Upon completion, the form shall be submitted to the ES&H Records Center and incorporated as part of the annual program self assessment documentation.

### 4.1 Operating Procedures

Operating Procedures will be developed in accordance with GN470098 Developing ES&H Procedures. Operating Procedures are assigned a review period by the author between one to three years. An email notification is sent to the author 60 days and 30 days before the procedure is due to expire. It is recommended that each program keep an updated list of procedures and their expiration dates in order to assure that the document does not become expired.

#### **4.2 Primary Hazard Screens and Hazard Analyses**

Primary Hazard Screens (PHSs) and Hazard Analyses (HAs) are required to be produced before any new activity or operation that represents significant risks. PHSs and HAs must be reviewed on an annual basis. Notification of impending expiration is given to the author by the ES&H Coordinators. In addition the corporate data base issues a notice 30 days in advance of the expiration.

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### **5.0 TECHNICAL REPORTS, DOCUMENTS and OFFICIAL CORRESPONDENCE**

All SAND reports will be produced in accordance with the current guidance for producing SAND documents. Guidance for producing SAND reports is available as SAND 2002-2068P.

Other program documents include plans, reports, permit applications, or other documents required by DOE or other regulatory agencies. These will be reviewed and updated as required by the pertinent regulation or other published guidance.

#### **5.1 Style Guide**

The ES&H Departments will follow the Center 6300 Writer's Guide for all documents produced with the exception of SAND reports. The Center 6300 Writer's Guide can be found at: <http://www-irm.sandia.gov/corpdata/esh-manuals/eshmc/WriterGuide/writerguide.htm>.

#### **5.2 Approved ES&H Acronyms and Definitions**

Acronyms commonly used by the ES&H Departments will be consistently applied in all documents. The approved list of acronyms is included as Attachment B. Word definitions will be consistent with the ES&H Manual Glossary.

#### **5.3 Approved ES&H Job Positions/Titles**

Approved job positions/titles within the ES&H Departments are included as Attachment C. These titles should be used consistently throughout all department TWDs, technical reports and official correspondence.

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## 6.0 SNL/CA ES&H WEB PAGES AND LINKS

Web pages will be designed in accordance with the *How to Write Web Pages for SNL's Webs*, which can be found at:

<http://www-irm.sandia.gov/webmentor/write-pages/index.htm>.

Each Department Manager and Program Lead will review for completeness and accuracy the web pages and the included or associated links that support the department or respective programs. This will be completed during the annual program self assessments. The review shall include, but not necessarily be limited to:

- Review content for concurrence with the referenced program requirements and activities.
- Review contact information to ensure that current program personnel are listed.
- Test all links on web pages.

The review of these will be documented using the *Programmatic Document Review Form* (Attachment A).

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## 7.0 DIRECTORY AND REFERENCE INFORMATION

All department directories and staff reference information will be reviewed no less than quarterly by the department office management assistant for accuracy and completeness.

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## 8.0 JOB QUALIFICATIONS AND TRAINING

Each position within the ES&H Departments provides unique support to the EMS and ISMS. It is important that each staff member of the department be qualified and well trained to perform the duties of the position.

### 8.1 Job Qualifications

The required job qualifications of each staff position are determined by the department manager. These qualifications are based on a combination of academic credentials, prior applicable experience, specialized credentials, and subjective attributes determined to be necessary for the position. The department manager will follow the corporate guidance for filling vacancies or new positions within the department. The department manager will exercise the right to move existing staff to new positions within the department as necessary for improved operations and/or staff development or growth.

### **8.2 Job Training**

There are three types of training applicable to members of the workforce within the ES&H Departments. These are:

- General corporate required training.
- Specific training required to perform the assigned job function (as determined by the department manager and/or program lead).
- Specific training required by regulations (as determined by the program lead).

It is the responsibility of the department manager, in consultation with the program leads (where appropriate) to identify the required training for each member of the workforce within the ES&H departments. Required training shall be identified for each position listed in Attachment C “Approved ES&H Job Positions/Titles.”

It is the responsibility of each member of the workforce to ensure that their training requirements are met and remain current.

### **8.3 Lapses in Training**

For training that includes a requirement for periodic re-training or re-certification, a lapse is considered to have occurred after a member of the workforce does not meet the deadline for re-training or re-certification.

When such a lapse occurs, the staff member will discontinue all activities governed or associated with the training until such time the re-training or re-certification is completed, unless a temporary authorization is approved by the Department manager

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## **9.0 ENVIRONMENTAL PROGRAM'S ASSESSMENT**

Annually, each program within the ES&H Departments will conduct assessments to determine the program's efficiency and effectiveness. Assessments need not cover the entire breadth of the program in a given year; they may be focused on a specific subset of elements of the program. It is anticipated, however, that all program elements will be assessed at least once in a three year period.

The ES&H Departments will follow the Self Assessment Program Operating Procedure OP471726.

For the Environmental Operations Department the following two program assessments are to be performed annually for each environmental program:

### **9.1 Program Self Assessment**

The Program Self Assessment is an annual effort to determine the completeness, quality and efficiency of the program structure and

management. It shall also be used to determine the alignment of the program with ISO14001 EMS requirements and principles.

The objective of this assessment is to assure that the program provides all of the required elements and continually strives for areas of improvement. This assessment will include a review of all procedures, processes, technical work documents, web pages, publications, communications, etc. of the program to assure that they are streamlined, accurate and current. The *Programmatic Document Review Form* should be used to document this part of the self assessment. (Attachment A).

## 9.2 Program Line Implementation Assessment

The Program Line Implementation Assessment is an annual effort to determine how well the line or site is implementing the provisions or requirements of the program or supporting specific program-related objectives/targets. The success or failure of the line or site to implement program requirements or provisions can be attributed to many things: culture, line management support, communications, program management, etc. (Note: Poor program implementation by the line may not necessarily indicate poor program management or execution, but the Program Lead should consider whether these are contributing factors and take appropriate action.)

Significant line violations to program requirements that are discovered during this assessment shall be input into the ES&H Self Assessment database for communications and tracking. (Note: the assessment should be “big picture” and not just conducted to find violations.) See Attachment D for the *Assessment Finding Form*. The completed form is submitted to the Division 8000 ES&H coordinator for entry into the self-assessment tracking system.

In conducting these assessments the Program Lead shall consider aligning with the scheduled Line Self Assessments conducted by the ES&H Coordinators. This will minimize the disruption to the line and gain the manager’s attention.

For Dept 8516 each assessment and its results shall be summarized in the annual update of each environmental program’s Program Plan. It shall include:

- A discussion of the scope of the assessment and the rationale,
- The methods used to conduct the assessment,
- A clear summary of the results,
- A discussion of the findings, strengths/weaknesses, recommendations, and areas for improvement.
- A summary of actions taken.

For Dept 8516 two additional department assessment activities will be conducted within the department to determine the implementation of environmental program requirements by the line. The results of each of these shall be provided to the Program Leads to be used as additional input to either of the above two required program assessments:

### **9.3 Environmental Programs Representative Assessment**

The Environmental Programs Representative will perform and record informal assessments of line implementation of critical program elements as negotiated with each program lead. These are not formally scheduled but are conducted on an on-going basis as part of the EP Reps scope of duties. See OP472165.

### **9.4 IDT Requirements Follow-Up Assessment**

IDT reviews may generate environmental program requirements that the line presenter must address as part of the execution of his project. The IDT Requirements Follow-Up Assessment is a random “spot check” on a percentage of projects presented at IDT to determine if the requirements that were given as a result of IDT were implemented by the line. The Environmental Program Representative / IDT Coordinator will perform this follow-up assessment. The results of these follow-up assessments may be useful input into the program self assessments. See OP471680.

All four assessments described above shall be documented and retained in accordance with OP471347 Administrative Procedures for Managing Sandia/CA ES&H Recorded Information.

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Attachment A  
**PROGRAMMATIC DOCUMENT  
REVIEW FORM**

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**PROGRAMMATIC DOCUMENT REVIEW FORM**

Document Type	Document Title	Review Complete / Date	Changes Made
Operating Procedure	Sanitary Sewer Outfall Monitoring (OP471410)	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Incident Reporting (OP471608)	<input type="checkbox"/>	
	Categorical Process Monitoring (OP471409)	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No
PHS	SNL8A00186-009 Environmental Monitoring	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Other Program Documents	Environmental Program Description	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Stormwater Pollution Prevention Plan for Construction Activities	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Stormwater Pollution Prevention Plan (Industrial + MS4)	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Web Pages	Program General Web Page	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Stormwater Web Page	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Sanitary Sewer Web Page	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No
	SPCC Training Page	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No

**Organization:** \_\_\_\_\_

**Program:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Signature:** \_\_\_\_\_  
**Program Lead**

Directions:

- Use this form to track review of all programmatic TWDs.
- Fill in the type and title of your program documents
- After completion, file form with your program records.

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Attachment B  
**APPROVED ACRONYMS**

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## Acronyms

AAQS – Ambient Air Quality Standards  
ABIH – American Board of Industrial Hygiene  
ACGIH – American Conference of Government Industrial Hygienists  
ADA – Americans with Disabilities Act  
ALARA – As Low As Reasonably Achievable  
ANSI – American National Standards Institute  
ASER – Annual Site Environmental Report  
ASLL – facility code assigned to SNL/CA by Nevada Test Site  
ATC – Authority to Construct  
ASTM – American Society for Testing and Materials  
AWCO – Alternate Waste Certification Official  
BA – Biological Assessment  
BAAQMD – Bay Area Air Quality Management District  
BCSC – Biological Chemistry Safety Committee  
BiOp – Biological Opinion  
BMBL – Biosafety in Microbiological and Biomedical Labs  
BSL – Biosafety Level, e.g. BSL-1 is biosafety level 1, etc.  
BTEX – Benzene, Toluene, Ethylbenzene, and Xylene  
CAA – Clean Air Act  
CAAA – Clean Air Act Amendments  
CARB – California Air Resources Board  
CCR – California Code of Regulations  
CDC – Centers for Disease Control  
CDFG – California Department of Fish and Game  
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act  
CESA – California Endangered Species Act  
CFC – Chlorofluorocarbons  
CFR – Code of Federal Regulations  
CIH – Certified Industrial Hygienist  
COC – Chain-of-Custody  
CRD – Confidential Restricted Data  
CRLF – California Red-Legged Frog  
CRMP – Cultural Resources Management Plan  
CTS – California Tiger Salamander  
DOD – US Department of Defense  
DOE – US Department of Energy  
DOT – US Department of Transportation  
DQO – Data Quality Objective  
DR – Disposal Request  
DTSC – Department of Toxic Substances Control  
EA – Environmental Assessment  
EIS – Environmental Impact Statement  
EIR – Environmental Impact Report

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EMS – Environmental Management System  
EO – Executive Order  
EPA – US Environmental Protection Agency  
EPP – Environmentally Preferable Purchasing  
ERG – Emergency Response Guide  
ES&H – Environment, Safety, and Health  
ESA – Endangered Species Act  
FIFRA – Federal Insecticide, Fungicide, and Rodenticide Act  
FONSI – Finding of No Significant Impact  
GPMPP – Groundwater Protection Management Program Plan  
GSA – General Services Administration  
HA – Hazards Analysis  
HAP – Hazardous Air Pollutants  
HBV – hepatitis B virus  
[HCP – Hearing Conservation Program](#)  
HEPA – High Efficiency Particulate Air  
HIV – Human Immunodeficiency Virus  
HWT – Hazardous Waste technician  
HWTSF – Hazardous Waste Treatment and Storage Facility  
IAQ – Indoor Air Quality  
[IARC – International Agency for Research on Cancer](#)  
IBC – Institutional Biosafety Committee  
IBDC – Inhabited Building Distance Calculations  
[IDLH – Immediately Dangerous to Life and Health](#)  
IDT – Interdisciplinary Team  
[IH – Industrial Hygiene](#)  
[IHSR – Industrial Hygiene Services Report](#)  
IS – Initial Study  
ISMS – Integrated Safety Management System  
LC – Lethal Concentration  
LD – Lethal Dose  
LDR – Land Disposal Restriction  
LECS – Liquid Effluent Control System  
LEL – Lower Explosives Limit  
LFL – Lower Flammability Limit  
LLNL – Lawrence Livermore National Laboratory  
LOD – Limit of Detection  
LOQ – Limit of Quantitation  
LWIS – Low-Level Waste Information System  
[MAWP – Maximum Allowable Working Pressure](#)  
MBTA – Migratory Bird Treaty Act  
MC&A – Material Control and Accountability  
MCLs - Maximum Contaminant Levels  
MLLW – Mixed Low-Level Waste  
[MSD – Musculoskeletal Disease](#)  
Mt – Metric Ton

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NAAQS – National Ambient Air Quality Standards  
ND – non detectable  
NDDB – California Natural Diversity Database  
NegDec – Negative declaration  
NEPA – National Environmental Policy Act  
NESHAP – National Emission Standard for hazardous Air Pollutants  
NEW – Net Explosive Weight  
NFA – No Further Action  
NFPA – National Fire Protection Association  
NIH – National Institutes of Health  
NIOSH – National Institute of Occupational Safety and Health  
NNSA – National Nuclear Security Administration  
NPDES – National Pollutant Discharge Elimination System  
NQA – Nuclear Quality Assurance  
NSO – Nevada Site Office  
NTP – National Toxicology Program  
NTS – Nevada Test Site  
ODC – Ozone Depleting Substances  
OEA – Occupational Exposure Assessment  
OP – Operating Procedure  
OSHA – Occupational Safety and Health Administration  
P2 – Pollution Prevention  
PAPR – Power Air Purifying Respirator  
PCB – Polychlorinated biphenyl  
PEL – Permissible Exposure Limit  
PK – Process Knowledge  
PKE – Process Knowledge Evaluation  
PM<sub>10</sub> – respirable particulate matter  
POTW – Publicly Owned Treatment Works  
PPE – Personal Protective Equipment  
PPOA – Pollution Prevention Opportunity Assessment  
PQL – Practical Quantification Limit  
PSDR – Package Storage and Disposal Request  
PSIG – Pound per square inch, gauge  
PTO – Permit to Operate  
QA – Quality Assurance  
QAP – Quality Assurance Plan  
QAPP – Quality Assurance Program Plan  
QC – Quality Control  
QDC – Quantity Distance Calculation  
RCA – Root Cause Analysis  
RCRA – Resource Conservation and Recovery Act  
RCT – Radiological Control Technician  
RDL – Reportable Detection Limit  
RG – Risk Group, e.g. RG1 is risk group 1, etc.  
[RMI – Repetitive Motion Injury](#)

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RMWSF – Radioactive and Mixed Waste Storage Facility  
RP – Radiation Protection  
[RSI – Repetitive Strain Injury](#)  
RWAP – Radioactive Waste Acceptance Program  
RWP – Radiological Work Permit  
RWQCB – Regional Water Quality Control Board  
RWR – Radioactive Waste representative  
SAW – Sampling and Analysis Worksheet  
SB-14 – Source reduction Evaluation Review and Plan; Hazardous Waste Management  
Performance Report; Summary Progress Report; State of California Senate Bill  
14  
[SE – Safety Engineering](#)  
SIP – State Implementation Plan  
SLB – Shallow Land Burial  
SME – Subject Matter Expert  
SOP – Standard Operating Procedure  
SSO – Sandia Site Office  
STLC – Soluble Threshold Leaching Procedure  
SWEA – Final Site-Wide Environmental Assessment  
SWP – Safe Work Permit  
SWPP – Stormwater Pollution Prevention Plan  
TAC – Toxic Air Contaminants  
TCLP – Toxicity Characteristic Leaching Procedure  
TI – Transport Index  
TID – Tamper Indicating Device  
TLD – Thermoluminescent Dosimeter  
TLV – Threshold Limit Value  
TPHD – Total Petroleum Hydrocarbons, diesel  
TRI – Toxic Release Inventory  
TRU – Transuranic  
TSCA – Toxic Substances Control Act  
TSD; TSDF – Treatment, Storage, and Disposal Facility  
TTLC – Total Threshold Limitation Concentration  
TTO – Total Toxic Organics  
TWD – Technical Work Document  
UEL – Upper Explosive Limit  
UFL – Upper Flammability Limit  
UN – United Nations  
USFWS – US Fish and Wildlife Service  
UST – Underground Storage Tank  
VOC – Volatile Organic Compound  
WAC – Waste Acceptance Criteria  
WCO – Waste Certification Official  
WCPP – Waste Certification Program Plan  
WDDR – Waste Description and Disposal Request  
WDT – Radioactive Waste and Mixed Waste Disposal Tag

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WET – Waste Extraction Test  
WIMS – Waste Information Management System  
WMS – Waste Management System  
WMS- California Waste Management System  
WPE – Waste Program Engineer  
[WSE – Workstation Evaluation](#)

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Attachment C  
**APPROVED ES&H JOB  
POSITIONS/TITLES**

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## **Job Positions/Titles**

### **Environmental Operations**

#### General

- Environmental Operations Department Manager
- Environmental Operations Technician
- Assessment Team Leader
- ES&H Coordinator
- Field Chemist
- Quality Assurance Coordinator
- Purchaser
- Sampler
- Traffic Manager

#### Air Quality Program

- Air Quality Program Lead
- Air Quality Contractor Support

#### Environmental Monitoring Program

- Environmental Monitoring Program Lead
- Associate Engineer, Environmental Monitoring Program
- Senior Engineer, Environmental Monitoring Program

#### Environmental Planning Program

- Environmental Planning Program Lead
- Environmental Planning Program Technologist
- Wildlife Biologist
- Wildlife Biology Intern
- Wildlife Technologist

#### Hazardous Material Program

- Hazardous Materials Management Program Lead
- Hazardous Materials Technician

#### Waste Management Program

- Waste Management Program Lead
- Waste Management Program Engineer
- Waste Certification Official
- Waste Management Training Coordinator
- Waste Stream Evaluator
- Hazardous Waste Technician
- Nonconforming Reporting Coordinator
- Nuclear Materials Representative
- Radiation Protection Staff Program Lead
- Radiation Protection Staff Technologist

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- Radioactive Waste Representative
- Radiological Control Technician

Pollution Prevention / Waste Minimization Program

- Pollution Prevention / Waste Minimization Program Lead
- Pollution Prevention / Waste Minimization Technician

**Health and Safety**

Industrial Hygiene

- Industrial Hygienist
- Industrial Hygiene Technologist
- Bio safety Officer
- Ergonomics Technologist

Safety Engineering

- Safety Engineer
- Safety Engineering Technologist
- Construction Safety Inspector
- Injury/Illness Reporting Clerk

Radiation Protection

- Health Physicist (Radiological Engineer)
- Radiological Control Technician
- Division Laser Safety Officer

ES&H Coordinator

- Division ES&H Coordinator
- Center ES&H Coordinator
- Self Assessment Program Lead
- Self Assessment Program Coordinator

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Attachment D  
**ENVIRONMENTAL OPERATIONS  
ASSESSMENT FINDING FORM**

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<b>Environmental Program</b>	
<b>Assessment Date</b>	
<b>Location</b>	
<i>Finding</i>	
<i>Standard and Code #</i>	
<i>Corrective Action</i>	
<b>Has corrective action been completed? If so, when?</b>	Yes ___ Date: _____ No _____
<b>Due Date</b>	
<b>Responsible SNL Manager/Org:</b>	
<b>Environmental Program</b>	
<b>Assessment Date</b>	
<b>Location</b>	
<i>Finding</i>	
<i>Standard and Code #</i>	
<i>Corrective Action</i>	
<b>Has corrective action been completed? If so, when?</b>	Yes ___ Date: _____ No ___
<b>Due Date</b>	
<b>Responsible SNL Manager/Org:</b>	

Note: In August 2006, this form was modified. The new form was distributed for use to the EMS Core Team on August 16, 2006.

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By my signature below, I affirm that I have read and understood this OP and all references called out in procedural steps, and I agree to operate within the stated constraints.

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Name Signature Org./Company Date

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Name Signature Org./Company Date

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Name Signature Org./Company Date

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Name Signature Org./Company Date

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Name Signature Org./Company Date

# Appendix D - SNL/CA Communication Plan Supplement

## Sandia National Laboratories, California Communication Plan Supplement



Approval by:

Original approved \_\_\_\_\_ 3/24/05 \_\_\_\_\_  
Gary Shamber, Manager, 8516 Date  
SNL/CA Environmental Management Representative

The following provides a description of the additional EMS program communications related elements incorporated at the Sandia National Laboratories, California (SNL/CA) site.

## 1. SNL/CA Communications Staff Elements

In addition to the corporate staff elements used in the communications of EMS, the CA site has the following:

### 1.1 Interdisciplinary Team (IDT):

IDT is a team of subject matter experts in ES&H, facilities and security who sponsor regular presentations by line on proposed projects and actions. During and following the presentation the IDT determines and communicates environmental requirements and recommendations that will be important for the line to incorporate in their planning and execution of the project or action.

Role as Audience:

- Presentation by line elements on proposed actions or projects that may have ES&H implications.

Role as Communicator:

- Communicate environmental regulations/requirements so these can be incorporated into the project planning and execution
- Communicate and discuss alternatives to proposed actions that can help support environmental objectives / targets and best business practices.

### 1.2 SNL/CA Senior Management EMS Steering Committee

The EMS Steering Committee consists of the site VP, the Site Operations Director, the site's Environmental Level II and Department Managers and a Line Director

Role as Audience:

- Receive an annual briefing by the site appointed Environmental Management Representative on the status, progress and issues of the EMS

Role as Communicator:

- Provide senior management guidance on site goals and objectives
- Provide site environmental policy execution and standards of performance
- Approve annual site environmental objectives and targets
- Communicate EMS with site senior management

### 1.3 SNL/CA EMS Advisory Team

This team consists of the SNL/CA EMS Core Team and line representatives.

Role as Audience:

- Receive information on site EMS implementation and status
- Receive information on future EMS plans and direction.

Role as Communicator:

- Communicate line/program issues that may affect EMS application in the line
- Recommend EMS execution actions with the line
- Recommend types of EMS communications that will be most effective
- Provide feedback to the SNL/CA EMS Core Team on EMS execution

#### **1.4 SNL/CA Environmental Management Representative and SNL/CA EMS Core Team**

This team manages the day to day execution and application of EMS for the CA site. This team is chaired by the site's VP appointed Environmental Management Representative.

Role as Audience:

- Receive and process feedback and recommendations from SNL/CA EMS Advisory Team and SNL/CA EMS Steering Committee
- Receive and process feedback from site surveys and line assessments
- Participate on corporate EMS team

Role as Communicator:

- Provide EMS status and information to SNL/CA EMS Advisory Team and SNL/CA EMS Sr. Mgmt. Steering Committee
- Provide EMS status and information to the site workforce in targeted as well as scheduled briefings and presentations.
- Communicate EMS goals, objectives and targets to site workforce using a variety of communications devices.
- Conduct an annual presentation to the site's Safety, Health and Environmental Advisory Committee (SHEAC).

Note: Because of the size of the site, the differences in management structure/elements and the role of the SNL/CA EMS Core Team, the EMS at SNL/CA will not utilize the SNL/CA ES&H Coordinators to the extent as those at the SNL/NM site.

## **2. Communication Tools**

In addition to the corporate tools available for communications the SNL/CA site has the following:

### **2.1 Publications**

*The Communicator* – Provides occasional stories about SNL/CA's endeavors in the area of environmental management.

*TNT*- Timely CNL/CA environmental announcements will be presented on a regular basis. Included will be statistics, reminders to think environmentally, and ways people can incorporate environmentally friendly practices in their daily activities.

*Environmental Scorecard*- A quarterly published report to all site managers and members of the workforce that provides a status on environmental objectives and targets.

## 2.2 Web Based Communications

*SNL/CA ES&H web site (Internal)* – A comprehensive ES&H web site that is being modified to provide an environmental Standard of Performance statement from the site VP as well as quick links to corporate and site environmental goals, objectives and targets and other related site.

*SNL/CA External 8000 web page* – An external website designed for communications to the external community. Will provide links to appropriate corporate environmental web sites and site environmental policies and EMS activities.

## 2.3 Other –

*New Hire Orientation Briefings* – The new hire briefing will cover an EMS introduction and site environmental policies and activities.

*EMS Information for Recruitment* – SNL/CA recruiters will be provided with a brochure on the site EMS to give to potential new hires

*Annual Site EMS Presentation* - Each year the EMS Core Team will sponsor a site wide presentation on environmental issues, progress and challenges.

*Environmental Program's Line Implementation Assessments* – Each environmental program will conduct a line assessment of its implementation of environmental practices and actions in support of approved site objectives and targets. Program line audits or assessments have been reported by other sites as a highly effective communications exchange.

### 3. SNL/CA Specific EMS Communication Methods

The table below provides information on unique SNL/CA methods of communicating EMS-related information and the annual schedule for these actions.

SNL/CA EMS Communication Methods				
Action	Communicator	Audience	Method	Schedule
Interdisciplinary Team (IDT) Project Reviews	Subject Matter Experts/Members of IDT	Presenters of Proposed Projects	Meeting, Minutes, SME written responses	Weekly
“Communicator” articles	EMS Core Team	Members of Workforce	Publication	Bi-monthly
“Environmental Scorecard”	EMS Core Team	Members of Workforce	Publication	Quarterly
Annual Site Environmental Presentation	EMS Core Team	Members of Workforce	Presentation	July
Annual Site Environmental Report	EMS Core Team	External Community	Publication	July
Earth Day Activities	EMS Core Team	Members of Workforce	Various	April
Target Organizational Presentations	EMS Core Team	Select Line Organizations	Presentation	Various
Senior Management Annual Presentation	EMS Management Representative	Senior Site Management	Presentation	February
External 8000 Web Page	EMS Core Team	External Community and Potential Hires	Web	Continuous
SNL/CA ES&H Web Site	EMS Core Team	Members of Workforce	Web	Continuous
New Hire Orientation Briefings	EMS Core Team	New Members of Workforce	Presentation	Routine
Contractor EMS Supplement	EMS Core Team	Site Contractors	Letters / Brochure	Routine
External News Articles	EMS Core Team	External Community	News Article	Routine
EP Rep Line Visits and Assessments	EP Rep	Line Organizations	One-on-one	Routine
TNT	EMS Core Team	Members of Workforce	Publication	Varies
ENV 233	EMS Core Team	Waste Generators	Classroom Training	Annual
Banners / Posters / Handouts	EMS Core Team	Members of Workforce	Misc. Distribution	Routine
Recruiting	Recruiters	Potential New Hires	Brochures	Varies

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